The Roots of the New Economy: An Institutional Perspective

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In recent years, the term New Economy has been defined or understood in a variety of ways. For economists, an acceleration of productivity growth is considered the key manifestation of the emergence of the New Economy, a development that has taken place in the United States, but not in major European countries. An understanding of the New Economy requires an examination of the forces behind it and the phases of its development. This article analyzes the structural, institutional and organization changes associated with the New Economy, with the objective of assessing whether the New Economy will emerge in major European countries and whether the acceleration of productivity growth is sustainable in the United States.

The first section of the article looks at the issues arising from an analysis of the surge in productivity gains in the United States during the second half of the 1990s. The second section attempts to explain the stages in the current transformation process, beginning with a discussion of the state of advancement of various structural changes that determine the effectiveness of the institutional changes. These institutional changes are in turn discussed in the third section. The fourth section endeavours to clarify the extent to which organizational change accompanies institutional change. The conclusion provides a brief outline of timelines and opportunities that are still open to structural policy.

Quest for Lost Productivity Gains

In the latter half of the 1990s, the rapid growth of the American economy established the United States as the model for what the New Economy will be. Meanwhile, the old Japanese and European national models collapsed. The most successful European economies have been smaller countries where conditions for growth were favourable, but difficult to replicate elsewhere, such as Ireland, Finland, and even Portugal. However, studies on the resurgence of productivity gains in the United States only partially identify what the New Economy will look like. The discrepancies that appear raise a number of interesting questions.

Bosworth and Triplett (2001:23) provide a comparative analysis of four recent studies on the resurgence of productivity growth in the United States[1] that identifies three factors to explain the accelera-

Table 1
Productivity Growth and Levels in OECD Countries

	1	2	3	4	5	6	7	8
Australia	1.2	1.7	2.1	1.9	78	84	6.0	0.2
Austria	2.0	2.7	2.3	2.5	74			
Belgium	1.8	1.7	2.0	1.8	76	110	7.0	0.4
Canada	1.0	1.2	1.5	1.4	80	84	8.2	2.0
Denmark	1.5	2.7	2.0	2.4	79	93	8	1.8
Finland	2.4	4.0	2.9	3.4	72	82	13.0	6.8
France	1.9	2.0	1.4	1.7	69	97	9.6	2.0
Germany	1.6	2.9	1.2	2.0	72	94	6.8	1.8
Ireland	3.5	3.5	4.4	4.0	79	96	13.7	6.6
Italy	2.2	2.1	1.5	1.8	67	106	6.8	1.6
Japan	2.6	1.6	1.2	1.4	74	74	8.0	4.4
Korea	5.6	4.6	4.8	4.7	48		11.8	8.0
Netherlands	1.1	1.8	1.0	1.4	76	109	8.2	2.0
Norway	2.1	3.1	1.1	2.1	82	108	8.0	1.6
Portugal	1.6	1.4	2.5	1.9	50	53	8.0	1.7
Spain	2.4	2.7	1.0	1.8	56	76	8.0	1.0
Sweden	1.6	2.9	2.1	2.5	70	84	11.6	3.2
Switzerland	0.4	0.1	1.1	0.5	85	91		
United Kingdom	1.9	1.5	1.1	1.3	65	87	10.6	2.4
United States	1.1	1.3	1.9	1.6	100	100	10.6	2.7

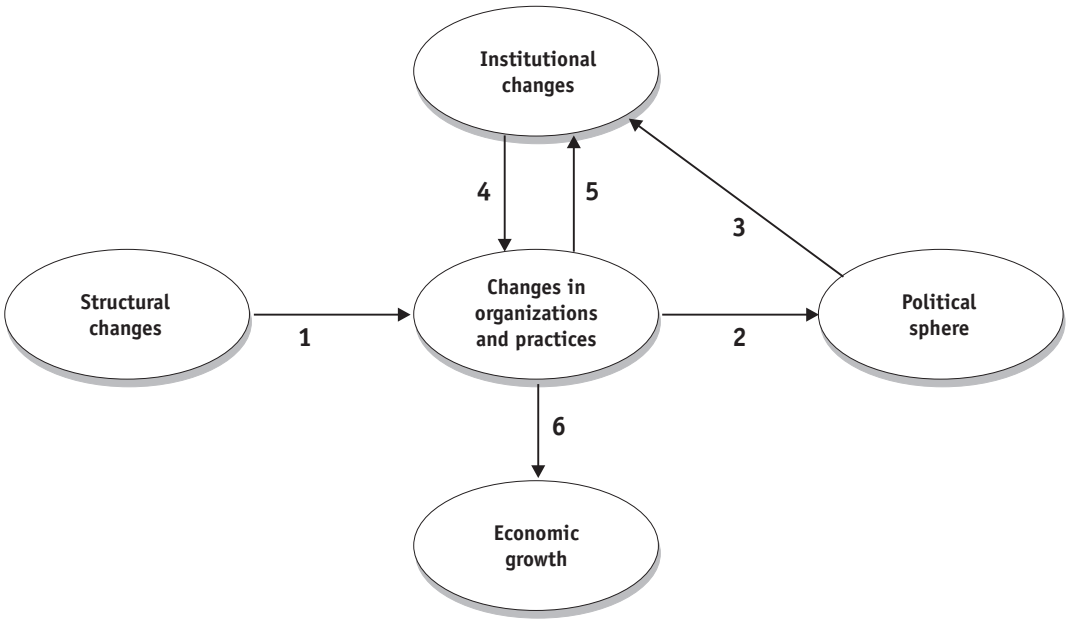
Notes:
Column 1: average annual rate of change in GDP per person employed, 1980-90, OECD (2001b).
Column 2: average annual rate of change in GDP per person employed, 1989-94, OECD (2001c).
Column 3: average annual rate of change in GDP per person employed, 1995-2000, OECD (2001c).
Column 4: average annual rate of change in GDP per person employed, 1989-2000, OECD (2001c).
Column 5: GDP per capita, 1999 (United States =100), OECD (2001a, p. 201).
Column 6: GDP per hour worked, 1999 (United States = 100), OECD (2001a, p. 201).
Column 7: share of ICT value added in the business sector, 1999, OECD (2001a, p. 87)
Column 8: share of ICT manufacturing value added in the business sector, 1999, OECD (2001a, p. 87)

tion of labour productivity growth during the latter half of the 1990s:

- a contribution of between 0.3 and 0.5 per cent per annum from growth in capital per worker;
- a negligible contribution from improvements in the labour quality (between 0 and 0.1 per cent per annum); and
- an impact on aggregate productivity growth from the information technology (IT) producing sector of between 0.2 and 0.3 per cent per annum, which is considerable given the still small weight of these industries in the economy.

However, these studies differ considerably in their analysis of the sources of the productivity growth acceleration in the non-IT producing sector, a group dominated by services industries. The annual report of the Council of Economic Advisers (2000) estimates the contribution to the acceleration from the non-IT producing sector at 0.7 per cent per annum, which is very large, while Oliner and Sichel (2000) estimate it at 0.5 per cent, and Gordon (2000) at zero. We find similar discrepancies in the sectoral estimates in growth of capital per worker, resulting in varying estimates for the acceleration of total factor productivity growth. These discrepancies may result from differences in methodologies[2] and assumptions regarding depreciation and the obsolescence of capital equipment. In addition, 1999 was a year of peak economic activity, while 1995 was a year of weak business conditions. This means that an assessment of developments for the entire 1990s is needed to put the productivity performance of the U.S. economy in perspective (see Table 1), a performance which

Figure 1
Relationships among Structural, Institutional and Organizational Changes



largely comes from "traditional" capital/labour substitution.[3]

To be sure, institutional and macroeconomic contexts differ from country to country. We believe that the only way to guide the choice of structural policies for these various nations is through better understanding of the nature of the transformations taking place. To do this, we will use the following definition:

> *We define the New Economy as an economy where economic actors can obtain information and implement knowledge which significantly alter their strategic capacities. This new capacity is facilitated by a small number of major structural changes and developed by institutional changes that allow the exploitation of positive externalities. Economic actors are in rather unequal positions to benefit from these new economic circumstances.*

This definition could apply to a growth process that took place in earlier periods. Its specificity must be seen in the structural conditions and modes of institutional change. We thus propose to follow the paths of national economies toward the New Economy through a series of structural changes (largely the result of past choices) and institutional changes (largely the result of political options recently adopted) that in turn govern the development of practices and organizations. Figure 1 demonstrates these relationships. By attempting to determine the positions of the main European countries and the United States in this process, we can assess the relative development of the New Economy in each country or region.

Major Structural Changes as a Precondition for the Development of the New Economy

In this section, we focus on long-term structural transformations which took place in the period immediately following the Second World War. We emphasize three structural changes that contributed directly to the increased flow of information and implementation of knowledge:

- a rise in general education levels in a universe in which the role of formal education is changing;

- the contemporary phase of the internationalization of economies, characterized in particular by increased trade in services; and
- the development and diffusion of new information and communications technologies (ICTs).

These structural changes foster two types of externalities, those engendered by higher levels of education, and those arising from opportunities for greater intermediation. These externalities are the two sources of endogenous growth found in the literature.[4]

In analyzing these three structural changes, we hypothesize that an initial phase will be achieved by most developed nations. At the end of this phase these countries will be forced to redefine their policies and undertake the institutional changes required in each area.[5]

A General Rise in Education Levels

A large proportion of each cohort is now enrolled in post-secondary education or receiving occupational training. Table 2 shows that in 1999-2000, around 40 per cent of persons aged 20 to 24 in most European countries were enrolled in post-secondary education (with even higher proportions in the United States and Japan). The only exceptions were Italy, Greece, and Portugal where the proportion was closer to 30 per cent. However, some nations have not expanded their education systems until fairly recently, so a large proportion of the adult population has not achieved senior matriculation (Table 2, column 1). These differences in formal educational attainment can be mitigated by differences in the rate of obsolescence of education and training across countries and new forms of social capital. With developed countries now reaching similar levels of educational attainment, these countries are now forced to address the issue of the renewal of their educational policies.

A Steady Shift Toward Internationalization

The liberalization of trade was initiated during the 1950s. Since 1980, we have seen the development of intra-industry trade flows for both heterogeneous products (vertically differentiated trade) and similar products of different quality (horizontally differentiated trade), and greater importance of intermediate goods (see Table 2, columns 4, 5, and 6).[6] The sectoral orientation of direct foreign investment toward large network services, such as finance and transportation, has been demonstrated in the development of truly international logistics. To this are added the various "invisible" exchanges or trade in services that comprise not only the development of agreements, particularly technological agreements, mergers and acquisitions, and management and accounting standards, but also the flow of information, academic collaboration, cultural exchanges, and travel. All this represents an international division of productive processes significantly more advanced than in the past.

General Access to New Technologies

The technological transformations discussed above are also related to discoveries dating back to the immediate postwar period, including the development of the first computers and the beginning of the race to miniaturize processors.[7] This latter development became the key factor in the diffusion of information and communication technologies during the 1980s and 1990s, lowering costs and facilitating adoption. Consequently, by the late 1990s a high rate of diffusion of computers and Internet use had been attained in developed countries. For example, in 2000, 40 per cent of Europeans over the age of 15 had access to a computer, and 30 per cent had Internet access and, in 2001, nearly all secondary schools had Internet access. Table 2 provides data on the num-

Table 2

Structural Change Indicators

Education, Internationalization, and Diffusion of ICT at the End of the 1990s

	1	2	3	4	5	6	7	8	9	10
Australia	43			24.4	10.8	2.1	8.85	30.9	75.0	469
Austria	26			63.4	39.8	14.3	4.82	7.2	57.6	257
Belgium	43	40	45	51.1	41.7	23.6	5.88	7.9	39.7	315
Canada	21			57.4	21.0	3.6	8.52	30.4	127.2	361
Denmark	20	50	59	34.7	31.2	9.1	6.94	26.0	72.5	414
Finland	28	42	53	70.3	23.6	7.2	5.88	68.1	159.1	360
France	38	42	47	49.1	46.6	21.5	5.96	5.3	19.2	222
Germany	19	41	43	52.9	46.9	18.7	5.27	10.3	31.7	297
Ireland	49			41.1	31.6	8.2	6.48	13.0	31.1	405
Italy	56	30	34	46.6	37.5	14.5	4.72	3.7	32.6	192
Greece	50	30	31	30.9	10.2	3.2	5.51	2.8	13.0	60
Japan	19			44.8	26.9	4.5	7.06	8.4	32.5	287
Korea	34			46.4	12.9	2.1	4.42	2.1	10.8	182
Netherlands	35	52	48	46.9	40.7	18.4	7.13	21.9	81.6	360
Norway	15			31.7	15.4	5.8	6.93	40.9	116.5	447
Portugal	79	32	42	37.4	24.4	10.8	5.31	3.1	13.4	93
Spain	65	40	51	41.1	36.3	17.8	4.03	4.0	15.7	119
Sweden	23	43	52	65.5	34.7	10.0	9.28	35.0	106.3	451
Switzerland	18			50.6	44.4	10.6	7.48	20.7	63.5	462
United Kingdom	18	41	42	47.1	46.6	17.1	9.35	15.7	52.5	303
European Union	39	40	43					10.2	37.4	
United States	13			54.4	42.3	10.7	8.87	56.5	234.2	511

Notes :

Column 1: Share of population aged 25-64 with less than senior matriculation, 1996, OECD (2001a, p. 173).

Column 2: Rate of post-secondary education enrollment for men aged 20-24,1999/2000 European Union, Eurostat.

Column 3: Rate of post-secondary education enrollment for women aged 20-24, 1999/2000 European Union, Eurostat.

Column 4: Share of intermediate goods in total exports exported to the 15 nations of the European Union, 1996, OECD (1999, p. 158).

Column 5: Vertically differentiated intra-industry trade as a percentage of total trade with EU countries, 1996, OECD (1999, p. 156).

Column 6: Horizontally differentiated intra-industry trade as a percentage of total trade with EU countries, 1996, OECD (1999, p. 156).

Column 7: ICT expenditures as a percentage of GDP, 1999, UNESCO *World Development Indicators*, 2001.

Column 8: Internet hosts per 1000 inhabitants, October 2000, OECD (2001a, p. 181).

Column 9: Internet hosts per 1000 inhabitants, July 1997, OECD (2001a, p. 181).

Column 10: Number of personal computers per 1000 inhabitants, 1999, UNESCO *World Development Indicators*, 2001.

ber of Internet hosts and personal computers on a per capita basis in OECD countries.

During the 1990s, a threshold appears to have been crossed, with investment in ICT attaining between 6 per cent and 9 per cent of GDP (Table 2, column 7). Southern European countries (Greece, Portugal, Spain) seem to be the exception. But their integration into Europe, like the level of their effort to educate the younger generation, suggests that this gap will be eliminated rapidly.[8] Therefore, all developed nations face similar problems linked to the diffusion and use of IT and the avoidance of a digital gap less related to opportunities for ICT access than to the ability of small business and disadvantaged households to know how to exploit IT.

New Challenges

The initial phase in the rise of the new growth model has fostered the development of a logistical

base favouring the development of two types of externalities (learning by doing and access to external information and knowledge). However, this phase raises certain issues. The first concerns changes in the actual skills of people who have received different levels of education. Indeed, the internationalization of knowledge, information, and their accompanying organizational modes, such as the speed at which the technologies themselves change, means an accelerated rate of skills obsolescence. Furthermore, the organization of work is far from being able to provide large numbers of skilled jobs or even mitigate through training the depreciation of human capital. Therefore, one must look beyond the analysis of basic data on educational attainment to understand the impact on growth (see Temple (2000a) and de la Fuente and Domenech (2000)).

The rapid development of new technologies does not favour stabilization of standards either, particularly in the software area. Rather, it can promote speculative behavior and accelerate technological obsolescence, prompting a shake-up in investment (Universal Mobile Telecommunications System (UMTS) financial contingencies in the telecommunications sector provide a recent, far-reaching example). National policies are largely incapable of regulating these contingencies,[9] which brings us to the third type of question, this time stemming from the ongoing internationalization process.

The new phase of internationalization, through the growth of trade in services, once again escapes government control, complicating tasks, such as the development of intellectual property laws and precautionary standards (in the banking and consulting and audit sectors) and coordination to promote standardization. These challenges are faced by countries with similar levels of development, defined by GDP per capita or per hour worked (see Table 1).[10] It remains to be seen whether these countries are committed to the action needed to bring about the institutional changes that meet these new challenges.

Institutional Change as a Catalyst for Opportunities for Growth

The political will behind contemporary institutional changes appeared, with Reagan in the United States and Thatcher in the United Kingdom, to be focused primarily on liberalization and decentralization policies. One can chart the progress of these policies using OECD studies of deregulation of product markets, regulatory bodies and the labour market.

Product Market Deregulation

During the 1990s, we observed not only an expansion of certain types of deregulation, but also the maintenance of certain restrictions. If, based on Nicoletti, Scarpetta and Boylaud (2000), we consider separately regulations affecting foreign relations (business and investment) and domestic activities, we see an overall international harmonization of the former (influenced by international negotiations through GATT and then the WTO) and the maintenance of significant national differences in the latter (see Table 3, columns 1 and 2) for regulations under direct or indirect control of government.[11] This indirect control is itself extremely multi-faceted, since it is related to both the size of the public sector (Table 3, column 4) and to government involvement in the operations of various sectors (Table 3, column 5). This last indicator, which involves, for example, the procedures for government intervention in major service networks such as the transportation and financial sectors, itself stems from certain situations characterized by quite similar levels of liberalization between countries (even where organizational forms are widely different) and from others where there exists a wide range of restrictions.

Seven service activities were analyzed in detail using the same OECD data base ((Gonenc, Maher and Nicoletti, 2000), and (Nicoletti, 2001)). Four

Table 3
Institutional Change Indicators
Degree of Business Regulation, 1998

	1	2	3	4	5	6
Australia	0.4	1.2	1.1	0.8	1.8	0.9
Austria	0.5	1.8	1.6	2.4	1.8	1.4
Belgium	0.6	2.7	2.6	2.0	3.8	1.9
Canada	2.2	1.0	0.8	1.2	1.4	1.5
Denmark	0.5	1.9	1.3	2.3	2.7	1.4
Finland	0.6	2.3	1.9	3.3	1.9	1.7
France	1.0	2.7	2.7	2.3	3.0	2.1
Germany	0.5	2.7	2.1	1.2	2.5	1.4
Ireland	0.4	1.1	1.2	1.3	0.5	0.8
Italy	0.5	3.3	2.7	4.4	3.3	2.3
Japan	1.0	1.8	2.3	0.7	2.1	1.5
Korea	1.7	2.7	3.1	2.5	2.2	2.4
Netherlands	0.5	1.8	1.4	2.6	1.9	1.4
Greece	1.3	2.7	1.7	3.4	4.5	2.2
Norway	2.2	2.2	1.3	3.7	2.5	2.2
Portugal	1.1	2.1	1.5	2.7	3.0	1.7
Spain	0.7	2.2	1.8	2.0	3.4	1.6
Sweden	0.8	1.7	1.8	2.3	0.6	1.4
Switzerland	1.3	2.2	2.2	2.3	1.8	1.8
United Kingdom	0.4	0.5	0.5	0.0	1.2	0.5
United States	0.9	1.1	1.3	0.8	0.9	1.0

Notes :

Column 1: degree of regulation of international business transactions, barriers to trade and investment;

Column 2: degree of regulation of domestic business transactions;

Column 3: degree of small business regulations, barriers to entrepreneurship;

Column 4: size of the public sector;

Column 5: degree of control of economic activities by the State;

Column 6: general degree of regulation of economic activities.

Source: Nicoletti, Scarpetta, Boylaud (2000), constructed using experts' scores from 0 (extremely liberal) to 6 (extremely strict regulation) for the various fields. The indicator in Column 2 is the average of the indicators in columns 3, 4, and 5.

of these services involved activities that were already competitive: truck transport, mobile telephones (conditions for competition for both of these sectors were harmonized during the 1990s), air transport, and retail sales, where fairly significant differences in regulation persist (see Table 4).The air transport industry relies on bilateral accords for certain international routes, while in retail trade some countries, which are in fact fairly liberal, maintain significant restrictions.[12]

The importance of the infrastructure network and historical operators stemmed the movement toward deregulation in three other major activities: fixed telephones (local service), electricity, and railroads (Table 4), resulting in diversity in national situations (particularly with respect to electricity), fairly independent of the degree of overall liberalization of the economy.

We conclude from this brief overview that the developed nations under review underwent during the 1990s a major phase of liberalization, harmonizing operating conditions in numerous fields, but leaving untouched strict regulations in certain service networks and government involvement in certain activities, which present specific challenges for adjustment.

Table 4
Additional Institutional Change Indicators
Degree of Regulation in Seven Service Sectors, 1998

	1	2	3	4	5	6	7
Australia	0	0	2	2	2	0	0
Austria	6	4	2	2	2		6
Belgium	4	4	2	2	2	4	6
Canada	2	2		4	2	6	2
Denmark	4		2	2	2	4	6
Finland	4	2	2	2	2	0	6
France	6			4		6	6
Germany	2	4	2	2	2	2	0
Ireland	2		2	2	2	4	6
Italy	4	6	6	2	2	6	6
Japan	6	4		4		4	
Korea	2	0	2	4	2		6
Netherlands	2	4	2	0	2	4	0
Greece	6	6	2	6	6	6	
Norway	4	2	2	2	2	0	6
Portugal	4	2	2	6	6	4	
Spain	4	4	6	2	2	4	6
Sweden	2	2	2	2	2	0	2
Switzerland	0	6	2	6	2		6
United Kingdom	4	0	2	2	2	0	2
United States	0	0	2	0	2	4	0

Notes: degree of liberalization: 0: extremely liberal; 2: liberal; 4: restrictive; 6: extremely restrictive
Column 1: retail trade; Column 2: truck transport; Column 3: mobile telephones; Column 4: air passenger transport
Column 5: fixed telephones; Column 6: electricity; Column 7: railroads.
Source: Nicoletti (2001).

How can we understand the current phase from the standpoint of the arrival of a New Economy? Note, in terms of international relations and business dynamics (Table 3), that the leading developed countries all find themselves in similar situations. We should consider as blocking factors for certain nations the persistence of regulatory restrictions in some service sectors or the relative size of the public sector. We could also consider that, on the one hand, numerous countries (including the United States) are affected by these exceptions (Table 4); on the other hand, the impact of government legislation largely relies on a sector's organizational capacities. Privatization in the electricity sector (in the United States) and of railroads (in the United Kingdom) has not always been successful. An important factor for an understanding of these outcomes is the strength and dynamism of the financial sector.

The role of this sector is to reallocate capital among firms and sectors and at the same time fund innovative projects. Market-oriented financial systems (i.e., not dominated by the banks) appear better suited to fulfil this role. Bank-dominated financial systems (themselves fairly differentiated) have also found ways to participate in capital restructuring operations and develop mechanisms to fund innovation. The United States, benefiting from economies of scale, has been able to develop mechanisms for the financing of high-risk activities. But a number of other countries have also succeeded in venture capital financing, developing formulas adapted to their own financial systems (including, at a minimum, development of their financial market). Moreover,

the brutal downturn in financial markets in 2001 reminded us that transparency and reliability are still top priorities and concerns for both types of systems.[13] Finally, the presumed link between the nature of the financial system and the performance of a developed economy remains likely, but is difficult to prove (Temple, 2000b).

From our brief overview of the adaptation of competitive relationships of OECD countries during the 1990s, we find that changes were significant and similar in nature in a number of areas. At the same time, a certain degree of diversity has been preserved and countries have adapted to the new context (this is the case for public sectors, such as financial systems). Indeed, no system seems to represent the most efficient model toward which all economies will converge. Changes in the labour market confirm this diagnosis.

Impact on the Evolution of the Labour Market

Since its beginning, the policy of liberalization has had as an objective greater labour market flexibility. Indeed, during the 1980s and 1990s, the labour market developed types of employment that facilitated short-term adjustment, especially in the area of unskilled labour. Between the late 1980s and the 1990s, job protection indicators for non-standard jobs fell considerably[14] while those for regular jobs (with indeterminant contracts) were unchanged (see Nicoletti, Scarpetta and Boylaud, 2000, Figure 11).

As did financial markets, labour markets retained their distinct features (see Table 5, columns 2 and 3), but created for themselves opportunities for short-term adjustment. These were not the only changes in labour markets. During the 1990s, firms also found ways to foster the work commitment of highly qualified workers.[15]

Table 5
Characteristics of Financial Systems and Degrees of Labour Market Regulation

	1	2	3	4
Australia	106	0.9	1.2	
Austria	16	2.8	2.0	0.04
Belgium	75	1.6	2.6	0.27
Canada	126	0.9	0.3	0.27
Denmark	60	1.7	1.2	0.3
Finland	270	2.3	1.9	0.3
France	103	2.5	3.7	0.2
Germany	68	3.0	2.5	0.17
Ireland	46	1.7	0.3	0.5
Italy	62	3.0	3.6	0.18
Japan	105	3.0	2.3	
Korea	76		2.3	
Netherlands	177	3.2	1.5	0.45
Greece	163	2.6	4.5	0.03
Norway	42	2.9	2.8	0.15
Portugal	59	4.3	3.2	0.15
Spain	72	2.8	3.7	0.16
Sweden	156	3.0	1.8	0.55
Switzerland	268	1.3	1.2	0.16
United Kingdom	203	0.7	0.3	0.65
United States	182	0.1	0.3	0.63

Notes:

Column 1: Market capitalization as a percentage of GDP, 1999. *Unesco World Development Indicators*, 2001, Table 5.3.

Column 2: Degree of protection of regular employment in 1998 from Nicoletti, Scarpetta and Boylaud (2000, Table A3.11, page 84). Summary indicator constructed from scores ranging from 0 to 6 based on the restrictive nature of regulation.

Column 3: Degree of protection for temporary employment in 1998, source same as Column 2.

Column 4: Venture capital as a percentage of GDP, 1999 (destination nation), (OECD, 2001a, p. 47)

Changes in Work Practices and Organization

A first phase of structural change, defined in terms of access to new technology, internationalization, and educational efforts, has been completed in developed countries. Institutional changes have likewise produced by the end of the 1990s a certain level of product market deregulation. Countries are often now only differentiated by the role played by the public sector. We will now seek to understand to what extent changes

in behaviour and in organizations have fostered economic growth in the 1990s, and to what extent changes in the structural and institutional context have slowed or accelerated this micro-economic dynamic of growth.

Three types of factors in this area, which could promote growth, should be considered:

- a leading sector, such as the ICT-producing sector;
- intermediation sectors, such as finance and telecommunications able to encourage product and process innovation and, in particular, new types of inter-firm relationships; and
- sustained consumer demand, open to innovations, especially in the services sector.

The Leading Role of the ICT-producing Sector

The strength of productivity gains in the ICT-producing industry makes it a leading sector for future growth. However, the limited relative importance of this sector means that its impact on aggregate productivity growth is small, except in a few countries (Table 1, column 5).

A more accurate measure of the leading sector can be gauged by combining all service activities directly associated with the production and implementation of new technologies. However, the business services sector, which includes businesses providing computer services firms, does not appear to be the source of significant productivity gains.[16] If our criterion for a leading sector remains the magnitude of productivity gains and their impact on the overall economy, this sector, even expanded to include related activities, cannot be considered a strong enough force to spur growth.

We must consider what ICT activities represent in terms of innovation rents and intellectual property rights. This is a difficult field in which the limits of what is patentable vary (from the patenting of source codes to file sharing, as in the Napster dispute). The current situation is no doubt more favourable in the United States. However, uncertainty harms all of the countries as a group and heightens the risks associated with technological development (such as mobile telephones with UMTS or biotechnologies whose medium-term applications appear to have been overestimated).

Intermediation Sectors and Distribution of New Organizational Forms

Analyzing growth through the dynamics of a single leading sector does not at first appear to be the most appropriate perspective for a growth system fostered by the development of new externalities (based on the definition of the New Economy in Section 1). The intermediation sectors (banks, communications, transport and wholesale and retail trade) are closer to the heart of the new growth dynamic. While the telecommunications sector has experienced significant productivity gains (arising in large part from investment in ICTs), productivity gains in the trade and transport sectors have been more problematic (OECD 2001a, p. 22). As for finance (often lumped together with business services activities), productivity gains have remained weak, despite intensive use of computer equipment.

Productivity levels would be a fairly good performance indicator. But their lack of availability means that other indicators are used, such as Internet connection costs, the number of ADSL lines for telecommunications, and the relative importance of venture capital in the financial sector (Table 5, column 4).

All systems have adapted in order to respond in various ways to the need to finance innovation. The financial crisis that took place between the spring of 2000 and the spring of

2001 reduced the value of technology stocks by half. One can ask whether this development represented an overreaction to speculation in dot-com companies.[17] It is also true that financial systems have demonstrated a remarkable ability to adapt, overcoming a series of crises from 1987 to 2001, gradually developing new precautionary rules.[18] However, as already noted, the quality of these network services relies less on ease of access than on opportunities for full exploitation of the skills of a wide range of users (from small businesses to individuals having no particular skills).

We can trace this indirectly when we attempt to monitor the diffusion of new organizational structures among firms, such as the development of business-to-business platforms, also known as B2B. We observe that these organizations were easier to put in place when the partners already had some knowledge and mutual trust.[19] The economic slowdown has produced a crisis of confidence and a retreat from these types of intermediation.

There are other examples of difficulties related to inter-firm coordination. For example, small firms have trouble accessing the logistics of complex services (which often required the in-house presence of qualified personnel). The use of the Internet to distribute fairly standardized services is still largely underdeveloped. All of these factors influence the pace of the emergence of the New Economy.

Households

Consumer demand and changes in life styles are often ignored in the analysis of the transformations taking place in contemporary economies, even though business is more attentive to consumer behaviour than in the past. Marketing services have difficulty keeping up with the more strategic nature of consumer behaviour.

It is true that these new technologies can greatly influence modes of consumption. E-commerce and online banking are new forms of organization that are likely, if not to change household expenditure patterns, at least to influence competitive relationships and modify time use.[20] This last impact is particularly important, since the increased time for leisure is a basic condition for the shift in spending patterns toward new recreational, educational, and health-related activities.

The concerns of the population in the health and education areas may serve to promote these types of policies. In highly urbanized societies, such restructuring of social time is possible, but it must be part of programs for collective action.[21] At present, the potential for shorter working time varies widely from country to country. The time needed for the development of policies to realize a shorter working time is long.[22]

This very long-term perspective may mean that New Economies will have a growth path that is fairly slow, unequal, and cyclical, and at the mercy of different types of speculative behaviour. Such an outcome is by no means inevitable. However, if we do not exercise caution, a series of complex inter-connecting events could, in time and given market mechanisms, lock us into a series of short-term solutions.

The New Economy and its Future in the United States and Europe

This article has examined the roots of the New Economy in the United States and Europe, looking at the structural and institutional changes which in turn engendered organizational changes. These changes led to an acceleration of productivity growth in the second half of the 1990s in the United States, a development that many American economists interpreted as the

launching of a New Economy. The sustainability of this New Economy is of course uncertain. On one hand, the U.S. economy has demonstrated an increased capacity to develop and diffuse ICT products that contribute significantly to the overall growth of the economy. On the other hand, the financial markets supporting these new activities have proven fragile and growing consumer debt and trade deficits may impede demand growth. In major European countries, the New Economy has not yet emerged, at least as manifested by an acceleration in productivity growth.

What are the prospects for the New Economy? Our analysis of long-term structural changes, which created the necessary conditions for the rise of the new system, suggests that most OECD countries have reached similar levels in terms of the educational attainment of the younger population, the internationalization of production processes, and the diffusion of the new technologies and have thus now entered a new phase of development. The structural changes are now raising similar issues in all countries, for example the quality of the education system, requiring appropriate institutional changes.

The major institutional changes of the past decade have largely focused on liberalization of markets and decentralization of public intervention. This has clearly increased the openness and the capacity of OECD economies for short term adjustment, without reducing the diversity of the institutional contexts regulating the labor markets and the financial markets. But major differences remain with regard to the regulation of large network services, such as the financial and transportation systems, and the importance of the public sector.

Beyond this diversity of institutional backgrounds new institutional change seems now to face different challenges. There is no easy answer to the issue of the optimal degree of regulation of economic activity. Instead of facilitating access to large network services, whether intermediation services or public services such as health and education, institutions must now ensure that all members of society can take advantage of the new range of possibilities offered by the modernization of these activities. This goes beyond the old objective of universal service to include that of transfer of knowledge and know-how and calls for new forms of regulation and intermediation. Our brief analysis of organizational change confirms the importance of such an expansion of the diffusion of new practices and capabilities to small and medium size businesses and households with limited knowledge and financial resources. Such a development would give momentum to the New Economy, supporting its emergence in Europe and its continuation in the United States.

Notes

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1 See, for example, the studies of Jorgenson and Stiroh (2000), Oliner and Sichel (2000), Council of Economic Advisers (2000), and Gordon (2000).

2 Cette, Mairesse and Kocoglu (2000) note that the allocation of productivity gains between equipment producers and users depends on whether the stock of capital equipment is estimated at factor cost or on a flow of services basis.

3 As emphasized by Brender and Pisani (2000) and Artus (2001).

4 Both of these impacts are shown combined in Figure 1 by arrows 1 and 6.

5 This phase is represented in Figure 1 by arrows 2 and 3.

6 During the 1980s and 1990s, we witnessed the internationalization of productive processes, as evidenced in the increased importance of trade in intermediate goods and technological specialization noted in the rise of intra-industry trade of products of varying types. This type of

trade increased in the EU from 35 to 43 per cent of total trade between 1980 and 1996 while the relative proportion of inter-industry trade decreased from 45 per cent to 37 per cent.

7 Intel president Gordon Moore formulated the "rule" of doubling the density of microprocessors every 18 months in 1964.

8 This is, however, not true for household access to high-speed lines that require costly infrastructure not available in all of the developed countries under review. It is also not true for developing countries where diffusion of ICTs remains limited due to lack of telecommunications infrastructure and/or lack of skilled personnel.

9 Note in passing that, despite many international technological agreements, multinationals are not inclined to implement this regulation.

10 The discrepancy between GDP per capita and GDP per hour shows that income gaps among countries are much more linked to time worked, and therefore free time, which is a significant resource in the emergence of the New Economy.

11 For general regulations affecting entrepreneurs, however, the discrepancies are moderate (Table 3, column 3).

12 In fact, degrees of concentration and deregulation are closely correlated! (Nicoletti, 2001, pg. 35).

13 This is shown by the Enron affair and the crisis of confidence it has engendered in the United States, as well as the creeping bank crisis experienced in Japan for more than 10 years.

14 The notable exception is France, which nevertheless experienced large increases in temporary jobs during the 1990s.

15 Other institutional changes compensate these adjustments in the labour market, especially with respect to pensions and health insurance, which we do not discuss in this paper.

16 These are not included among the services for which Sharpe and Gharani (2001) report a resurgence in productivity growth.

17 Biotechnology has also attracted venture capital, speculating on the potential for rapid applications to the health care field. The disappointment engendered by the slowness of such developments may prompt withdrawal of venture capital from this sector, with the rate of retreat directly proportional to the market-orientation of a country's financial markets.

18 The exceptions are the financial systems of Japan and the less developed countries seriously affected by financial crises.

19 Diffusion of the multidivisional structure had a neutral impact on organizational innovation in terms of the external environment of the firm (Kogut, 2000). New inter-firm organizations can involve coordination problems that delay diffusion, which for multidivisional firms already took some twenty years in each country.

20 We also expect that generally only 5 to 10 per cent of purchases can be done electronically in the future (Moati and Raffour, 2000). E-commerce appears to be more complementary than a substitute for traditional purchases, except for several standard products, such as books or records.

21 A policy to reduce work time is an example.

22 This is evidenced by repeated failure to reform health care and education systems on the one hand, and the reluctance of many countries to encourage shorter work time on the other.

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