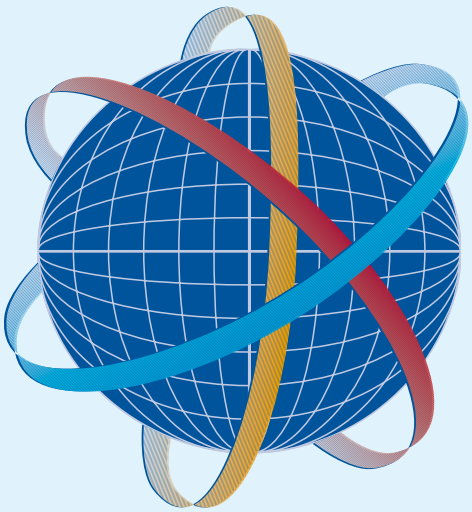
OESTERREICHISCHE NATIONALBANK
Eurosystem

35. VOLKSWIRTSCHAFTLICHE TAGUNG 2007
35TH ECONOMICS CONFERENCE 2007

Humankapital und Wirtschaftswachstum

Human Capital and Economic Growth



Inhalt
Contents

Klaus Liebscher
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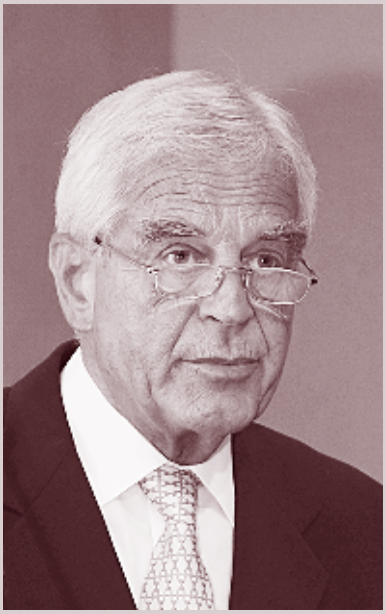


Tagungseröffnung

Sehr geehrte Damen und Herren!
Ich begrüße Sie zur 35. Volkswirtschaftlichen Tagung der Oesterreichischen Nationalbank und heiße Sie alle sehr herzlich willkommen. Ich freue mich über die wieder so große Zahl an Teilnehmern, um am Meinungsaustausch mit den vielen namhaften internationalen und österreichischen Experten, die wir für diese Tagung gewinnen konnten, mitzuwirken. Wir alle erwarten, von ihrer Expertise und ihren Ansichten zum diesjährigen Tagungsthema *„Humankapital und Wirtschaftswachstum"* lernen zu können und ich sehe daher einer angeregten Diskussion dieses wichtigen Themas während der nächsten beiden Tage mit großem Interesse entgegen. Ich möchte mich im Voraus bei allen Vortragenden und bei den Teilnehmern der Podiumsdiskussionen sowie bei allen Mitarbeitern der Oesterreichischen Nationalbank, die diese Tagung vorbereitet haben, sehr herzlich bedanken.

Eine besondere Auszeichnung für die Oesterreichische Nationalbank ist es, dass Herr Bundeskanzler Dr. Alfred Gusenbauer trotz seiner zahlreichen anderweitigen Verpflichtungen Zeit gefunden hat, sich zum ersten Mal in seiner neuen Funktion an die Teilnehmer der diesjährigen Volkswirtschaftlichen Tagung zu wenden.

Ich möchte mich an dieser Stelle auch sehr herzlich bei Herrn Vizekanzler und Bundesminister für Finanzen, Mag. Wilhelm Molterer, für seine Teilnahme am traditionellen Kamingespräch heute Abend bedanken.

Ich freue mich ebenfalls sehr, Frau Bundesministerin Dr. Claudia Schmied und die Spitzen der Sozialpartnerschaft morgen für den österreichbezogenen, wirtschaftspolitischen Teil der Volkswirtschaftlichen Tagung begrüßen zu dürfen.

Sehr herzlich begrüße ich unsere Vortragenden des heutigen Vormittags, Herrn Joaquín Almunia, europäischer Kommissar für Wirtschaft und Währung, Herrn Lucas Papademos, Vize-Präsident der Europäischen Zentralbank, sowie Herrn Emmanuel Jimenez, (Sektor-)Direktor in der Weltbank. Ich danke Ihnen, sehr geehrte Herren, für Ihre Teilnahme an unserer Tagung.

Mein herzlicher Gruß gilt aber auch den zahlreichen anwesenden Botschaftern aus einer ganzen Reihe von Ländern, anderen Vertretern der diplomatischen Korps hier in Wien, den Kollegen vieler ausländischer Zentralbanken und den Medienvertretern des In- und Auslands, die unsere Einladung wieder so zahlreich angenommen haben.

Humankapital und Wirtschaftswachstum scheinen auf den ersten Blick in einer selbstverständlichen Beziehung zu stehen, die keiner besonderen Diskussion bedarf. Kaum jemand wird bestreiten, dass gute Ausbildung eine wesentliche Voraussetzung für individuellen Erfolg am Arbeitsmarkt darstellt und ein gutes Bildungssystem deshalb nicht nur Beschäftigungsfähigkeit, sondern auch Wirtschaftswachstum und Standortqualität beeinflusst. Zwei Entwicklungen der jüngeren Zeit haben aber dazu geführt, dass wir Humankapital in das Zentrum der diesjährigen Tagung stellen.

Seit Mitte der Neunzigerjahre beobachten wir ein Ende der Konvergenz des europäischen Produktivitätswachstums mit dem US-amerikanischen. Dieses nunmehr divergie-

rende Produktivitätswachstum war eine wichtige Inspiration für die im Jahr 2000 beschlossene Lissabon Agenda.

Einige interessante theoretische und empirische Untersuchungen haben seither gezeigt, dass ein Teil des europäischen Wachstumsdifferenzials mit der Struktur unseres Bildungssystems in Zusammenhang stehen könnte. So z. B. präsentierte Professor Krueger[1] auf der Volkswirtschaftlichen Tagung 2004 eine Studie, die die Überbetonung berufsspezifischer Fähigkeiten gegenüber berufsübergreifenden her-

ausstrich. Damit zusammenhängend verweisen andere Autoren auf mangelnde Qualität und Quantität in der tertiären Ausbildung, zum Beispiel in der wissenschaftlichen Nachwuchsausbildung. Diese Studien haben am bildungspolitischen Selbstverständnis vieler europäischer Länder, darunter auch Österreich, gerüttelt, denn bisher ging man immer von qualitativen Vorteilen des europäischen Bildungssystems aus. Die kritischere Beurteilung vieler europäischer Bildungssysteme ist nicht durch eine plötzliche Verschlechterung der Systeme selbst, sondern vielmehr durch neue Anforderungen zu erklären. Wer sich an die Spitze des beschleunigten technischen Wandels setzen und damit auch seine Wettbewerbsfähigkeit absichern möchte, benötigt dementsprechendes Humankapital.

Hohes Wirtschaftswachstum in Entwicklungs- und Schwellenländern, z.B. in China und Indien, führt nicht nur zu einem höheren Wohlstand in diesen Ländern, sondern auch zu mehr Konkurrenz für europäische Unternehmen. Diese Entwicklung möchte ich ausdrücklich begrüßen, da sie langfristig für alle vorteilhaft sein wird. Kurz- bis mittelfristig werden jedoch strukturelle Anpassungen notwendig sein, die dazu führen können, dass Arbeitsplätze verloren gehen.

Es gibt mittlerweile einen Konsens unter den europäischen Regierungen, dass es kontraproduktiv wäre, diese Arbeitsplätze schützen zu wollen. Vielmehr geht es darum, die betroffenen Arbeitnehmer in die Lage zu versetzen, aufgrund ihres Humankapitals neue Chancen zu nutzen und neue Jobs anzunehmen. Letztes Jahr habe ich auf der Volkswirtschaftlichen Tagung betont, dass dem Bildungssystem besondere Bedeutung bei der Bewältigung der Globalisierung zukommt. Ein Paper der deutschen EU-Präsidentschaft spricht von den sozialen Brücken, die wir für von Arbeitslosigkeit oder Armut Bedrohte oder Betroffene errichten müssen: Bildung ist dabei das Fundament dieser Brücke von der Arbeitslosigkeit zur Teilhabe am wirtschaftlichen und

[1] *Krueger, D. and K. Kumar. 2004. U.S. – Europe Growth Differences: The Role of Education. In: 32. Volkswirtschaftliche Tagung 2004. Wachstum und Stabilität in der EU: Perspektiven der Agenda von Lissabon. Wien: Oesterreichische Nationalbank.*

somit auch gesellschaftlichem Leben. Als Mitverantwortlicher für die Stabilität des Euro gefällt mir diese Metapher besonders, denn schließlich finden sich auf den aktuellen Euroscheinen durchwegs symbolhafte Brückenmotive. Gerade in einer Währungsunion ist durch Bildung ermöglichte berufliche und geographische Mobilität wichtig, da ungleiche Entwicklungen nicht durch Wechselkursanpassungen wieder ins Lot gebracht werden können.

Europäische Bildungssysteme sehen sich deshalb vor der doppelten Herausforderung, richtige Antworten auf das vergleichsweise schwächere Wachstum in Europa und das hohe Wachstum in Schwellenländern zu finden. Diese Herausforderung wird auf mehreren Ebenen angenommen werden müssen – von der Vorschule über die Pflichtschule bis hin zu Doktoranden. An dieser Stelle möchte ich unterstreichen, dass die Herausforderung keineswegs nur für entwickelte europäische Länder besteht. So sehen die Millennium-Entwicklungsziele der UNO eine universelle primäre Ausbildung bis 2015 vor. Wir sollten daher bei allem Fokus auf europäische Probleme nicht das Humankapital der armen Länder vergessen und trotz eigener Schwächen versuchen, diesen Ländern bei ihrer Humankapitalentwicklung zu helfen.

Es freut mich, dass sich die österreichische Bundesregierung auch nach dem Urteil internationaler Organisationen bei der Bewältigung dieser Herausforderungen auf dem richtigen Weg befindet. Die Oesterreichische Nationalbank hat diesbezügliche Anstrengungen schon immer unterstützt. Zum einen finanzieren wir universitäre Forschung direkt über unseren Jubiläumsfonds und indirekt über die Alimentierung der neu gegründeten Nationalstiftung für Forschung und Entwicklung. Zum anderen engagieren wir uns für ökonomische Bildung.

In einer Welt liberalisierter, entwickelter und liquider Finanzmärkte, aber auch teils privater Alters- und Gesundheitsvorsorge, gelangt man mit einem Sparbuch, so wichtig ein solches ist, schnell an die Grenzen seiner Möglichkeiten.

Aufklärung und ökonomische Bildung von Finanzkonsumenten ist nicht nur wichtig, um das Angebot an Anlageprodukten optimal auszunutzen. Sie ist auch eine Bedingung für das effiziente und transparente Funktionieren der Finanzmärkte. So helfen wir von der Oesterreichischen Nationalbank mit, Geldpolitik und die Bedeutung von Geldstabilität über Lehrmaterial für Schulen zu vermitteln.

Trotz der zentralen Bedeutung von Bildung möchte ich Wirtschafts- und Sozialpolitiker warnen, die nun glauben, das „eierlegende Wollmilchferkel“ gefunden zu haben, also Wachstums-, Sozial- und sogar Entwicklungspolitik auf Bildungspolitik reduzieren. Stabile öffentliche Finanzen, wettbewerbsintensive Produktmärkte, flexible Arbeitsmärkte und traditionelle Sozialpolitik sowie ein faires Rechtssystem werden nicht zur Gänze durch Bildungspolitik ersetzt werden können. Wir müssen uns auch der Risiken bewusst sein, Bildung verstärkt unter ökonomischen Gesichtspunkten zu sehen und dementsprechend zu gestalten. Bildung hat immer einen Wert an sich und ist ein wesentlicher Schlüssel für das Verständnis von Kunst und Kultur. Sie ermöglicht menschliches Zusam-

menleben und trägt zur Sinnstiftung bei. Sie kann völlig losgelöst von ökonomischen Konsequenzen zu großer individueller Zufriedenheit beitragen.

Wir haben versucht, den vielen Facetten und Aspekten von Bildung und Humankapital durch eine möglichst umfassende Schwerpunktsetzung Rechnung zu tragen. Der erste Tagungsblock wird Bildung in ihren zahlreichen Wechselwirkungen mit anderen wirtschaftlichen und gesellschaftlichen Trends und Entwicklungen näher beleuchten, in Industrieländern wie in Entwicklungsländern.

Wir werden uns Themen wie z. B. Globalisierung, wirtschaftlichem Erfolg, Wachstumsförderung und Armutsbekämpfung, die wir im ersten Teil vorfinden, im Verlauf der Tagung näher widmen: Im Anschluss an den ersten Block folgt ein wissenschaftlicher Vortrag, der empirische Ergebnisse für die Wirkung von Humankapital auf Wirtschaftswachstum präsentiert. Dazu hat sich dankenswerterweise der anerkannte Humankapital-Experte Angel de la Fuente, Vize-Direktor des Instituts für Wirtschaftsanalyse in Barcelona, bereit erklärt.

Die anschließende Podiumsdiskussion wird erörtern, ob Europa auf dem richtigen Weg ist, das Wachstumspotenzial von Humankapital optimal auszuschöpfen. Wir werden dabei Sichtweisen von dies- und jenseits des Atlantiks hören, von Vertretern internationaler Institutionen und Universitäten. Der heutige Tag wird mit dem traditionellen Kamingespräch ausklingen.

Morgen wird sich zunächst ein wirtschaftspolitischer Übersichtsvortrag von Jeanne Hogarth, Abteilungsleiterin des Federal Reserve Board, mit dem aus Sicht der Nationalbank besonders interessanten Thema der Wissensvermittlung in Wirtschafts- und Finanzfragen beschäftigen.

Die anschließende Podiumsdiskussion mit führenden wirtschaftspolitischen Akteuren wird wie bereits üblich näher auf Herausforderungen für Österreich eingehen, in diesem Jahr auf die Bildungspolitik. Ich denke, auf diese Debatte können wir schon ebenso gespannt sein wie auf die Referate zuvor. In diesem Sinn, meine Damen und Herren, wünsche ich Ihnen und uns allen eine interessante Volkswirtschaftliche Tagung!

Alfred Gusenbauer

Bundeskanzler der Republik Österreich

Bildung – Voraussetzung für wirtschaftlichen Erfolg im 21. Jahrhundert

Sehr geehrter Herr Gouverneur!
Meine Damen und Herren!
Ich freue mich ganz besonders, dass die Oesterreichische Nationalbank (OeNB) für die diesjährige Volkswirtschaftliche Tagung das Thema *„Humankapital und Wirtschaftswachstum"* gewählt hat, dessen umfassende Bedeutung für die gesellschaftliche und volkwirtschaftliche Entwicklung unumstritten ist.

Ich will mich nicht der Meinung jener Sprachwissenschafter anschließen, die im Jahr 2004 das Wort „Humankapital" zum Unwort des Jahres gewählt haben, finde es aber in diesem Zusammenhang treffender von Bildung zu sprechen. Bildung ist ein neutraler Begriff, der den Menschen nicht ausschließlich auf ökonomische Funktionsfähigkeit reduziert. Humankapital hingegen ist Teil des Produktionsfaktors Kapital, ebenso wie Sozialkapital, das übrigens auch einen beachtlichen Einflussfaktor für Wachstum darstellt. Die Unterschiede zwischen Bildung und Humankapital entstehen aus der Perspektive des Betrachters – in der Sache sind beide ähnlich. Mir ist es aber wichtig zu betonen, dass Wissen und Fertigkeiten des Einzelnen nicht nur eine ökonomische, sondern mehr denn je eine eminent soziale und gesellschaftspolitische Bedeutung haben.

Der strukturelle Wandel vollzieht sich heute mit atemberaubender Geschwindigkeit: Die Innovationszyklen werden kürzer. Der Innovations- und Anpassungsdruck steigt. All das führt dazu, dass Bildung der Schlüssel zur gesellschaftlichen Teilhabe wird. Wer früh den Bildungsanschluss verliert, ist mit Armut, Arbeitslosigkeit und gesellschaftlicher Marginalisierung konfrontiert. Investition in Bildung ist sowohl eine volkswirtschaftliche als auch eine gerechtigkeitspolitische *Win-Win-Situation*. Wo kontinuierlicher Aufbau und beständige Erneuerung der Kenntnisse von Menschen den Kern der Tätigkeit eines modernen Sozialstaates ausmachen, da werden zugleich die Voraussetzungen erfolgreichen Wirtschaftens geschaffen.

Zunächst ganz generell etwas zur ökonomischen Bedeutung von Bildung: Ich glaube, es ist schon lange unbestritten – und das ist das Verdienst der endogenen Wachstumstheorie – dass die Qualität des Humankapitals entscheidend Wachstum und Wettbewerbsposition eines Landes beeinflusst. Relativ neu ist die Erkenntnis, dass ökonomische Wirkungen von Bildungsinvestitionen nicht unabhängig vom jeweiligen technologischen Standard einer Volkswirtschaft sind. Tertiäre Bildung wird umso wichtiger, je näher sich ein Land an der Spitze der produktivsten Länder befindet. Diejenigen Länder, die sich dem höchsten technologischen Standard angenähert haben, können ihre Wettbewerbsposition nur halten oder ausbauen, wenn sie in Spitzenforschung und somit vorrangig in die Verbesserung der tertiären Ausbildung investieren. Ein innovationsbasiertes Wachstum benötigt daher ein höheres Qualifikationsniveau, das nur im universitären Bereich vermittelt wird.

Gerade diese Einsicht hat für die Forschungs- und Bildungspolitik in Europa entscheidende Bedeutung. Einige europäische Staaten, nicht zuletzt Österreich, setzten ihre bil-

dungspolitischen Schwerpunkte traditionell auf die Ausbildung im sekundären Bereich. Berufsorientierte Bildungssysteme sind dann wichtig, wenn sich die Volkswirtschaft durch Imitation von Innovation in einem Aufholprozess befindet. Verbreitung und Produktivität in den Informations- und Kommunikationstechnologien sind in manchen Mitgliedstaaten der Europäischen Union heute noch immer unterdurchschnittlich, auch dominiert nach wie vor der Export im Bereich mittlerer Technologie und kapitalintensiver Güter.

China, Südostasien und die neuen EU-Mitgliedstaaten dringen zunehmend in diese wirtschaftlichen Segmente vor. Es bahnt sich eine Verlagerung der globalen komparativen Vorteile im internationalen Handel an. Vor diesem Hintergrund muss die Europäische Union Reformen mit hochschulpolitischem Schwerpunkt vorantreiben und das europäische Universitätssystem modernisieren, erste Schritte wurden etwa durch die Initiierung des *Bologna Prozesses* gesetzt.

Diese Entwicklung ist auch für Österreich sehr wichtig. Die nächsten Jahre sind hier richtungweisend. Es entscheidet sich, ob es Österreich gelingen wird, seine wirtschaftlichen Strukturen für einen dauerhaften Verbleib an der Spitze der produktivsten OECD-Länder auszurichten. Insbesondere rohstoffarme, exportorientierte Länder können ihr Niveau nur so lange halten, wie sie in der Lage sind, innovative Produkte und Dienstleistungen anzubieten, die andere Ländern noch nicht herstellen können, aber benötigen. Der notwendige Wandel vom Aufhol- zum Innovationsregime, den Österreich derzeit durchläuft, stellt sich nicht automatisch ein. Der Förderung der Spitzenforschung als Innovationsmotor für die Wissensgesellschaft kommt oberste Priorität zu – etwa durch die Verbesserung der universitären Ausbildung und die Steigerung der Attraktivität der österreichischen Universitäten und Forschungseinrichtungen sowie deren Internationalisierung. An dieser Stelle sei die im letzten Jahr erfolgte Gründung des *Austrian Institute of Science and Technology* erwähnt, einer Spitzenuniversität für Forschung und Entwicklung.

Forschungs- und Bildungspolitik muss aber, will sie erfolgreich sein – erfolgreich auch im Sinn von Aufklärung und Demokratie – beides berücksichtigen, Spitze und Breite. Die Breite braucht die Spitze, sie gibt die geistige Anregung, ohne Breite aber agiert die Spitze im luftleeren Raum. Die Ausbildung muss auf allen Ebenen verbessert werden, nicht nur im universitären Bereich. Qualitativ hochwertige vorschulische Ausbildung für alle Kinder, die Förderung der sprachlichen Ausbildung und Entwicklung insbesondere von Kindern von Migranten, oder die Bildungsgarantie bis zum 18. Lebensjahr, müssen ebenso Teil einer österreichischen Exzellenzstrategie sein.

Chancengerechtigkeit, die Aufhebung sozialer Barrieren beim Zugang zur Bildung, die individuelle Förderung und Unterstützung jedes Einzelnen optimieren die individuelle Leistungsfähigkeit; sie sind unabding-

bar für den wirtschaftlichen Erfolg. Ich mache an dieser Stelle kein Hehl daraus, dass ich die frühe Selektion, das Verteilen von Kindern auf verschiedene Bildungswege nicht nur für sozial ungerecht und leistungsfeindlich halte. Diese Frühselektion mag traditionell begründet sein, ist aber sicherlich nicht wissenschaftlich fundiert. Heute entscheidet sich bereits im Vorschulalter der spätere Entwicklungsweg. Wir wissen, dass es überwiegend Kinder mit sozial schwachem Hintergrund und insbesondere Kinder von Migranten sind, für die schon im frühen Kindesalter eine weiterführende Ausbildung in Richtung Matura äußerst unwahrscheinlich ist, wobei Interesse und Begabung kaum eine Rolle spielen.

Ziel muss es daher sein, sämtliche Barrieren sozialer und geschlechtsspezifischer Art abzubauen. Bezeichnend für die derzeitige Situation ist auch der geringe Anteil von Forscherinnen an den österreichischen Universitäten – lediglich 11 % aller Professoren sind Frauen; es gibt an den 21 staatlichen Universitäten keine einzige Rektorin – für mich ein Zeichen dafür, dass nicht das gesamte Wissenspotenzial unserer Gesellschaft ausgeschöpft wird. Und das kostet die Volkswirtschaft viel.

Dass es möglich ist gerecht und ökonomisch erfolgreich zu agieren, beweisen die skandinavischen Länder: hervorragendes Bildungswesen, flächendeckende sowie hochwertige Betreuungseinrichtungen für Kinder und die dadurch ermöglichte hohe Beteiligung von Frauen am Erwerbsleben. Alle diese Faktoren tragen dort dazu bei, dass die Arbeitslosigkeit niedrig bleibt und das Risiko von Bildungsarmut und sozialem Ausschluss gering ist.

Die österreichische Bundesregierung hat die Bildungspolitik zu einem zentralen Schwerpunkt ihrer Wachstums- und Beschäftigungsstrategie gemacht. So wurden – nach Jahren des Rückgangs – die Ausgaben für den Bildungsbereich deutlich erhöht, ebenso die Ausgaben für die Universitäten. Wichtige Reformen unseres Bildungswesens von der Vorschule bis zur Spitzenuniversität werden zügig umgesetzt. Dazu zählen etwa die Senkung der Klassenschülerhöchstzahl oder der Ausbau der Ganztagsbetreuung für Schüler.

Unsere Wachstums- und Beschäftigungsstrategie hat dabei zum Ziel, durch Innovationen erzieltes nachhaltiges Wachstum, die Arbeitslosenquoten dauerhaft zu reduzieren. Österreich ist auf einem guten Weg. Österreich wird generell eine zufriedenstellende makroökonomische Performance und eine solide strukturelle Basis bescheinigt. Zuletzt hat Anfang Mai das *International Institute for Management Development* im *World Competitiveness Yearbook* diesen Umstand bestätigt, indem es die Wettbewerbsfähigkeit des Wirtschaftsstandorts Österreich als weltweit elftbeste – im EU-Rahmen sogar fünftbeste – eingestuft hat. Die aktuelle konjunkturelle Lage ist für die gesamte EU sehr erfreulich, aber Österreichs Wirtschaft wächst mit heuer wahr-

scheinlich 3% noch stärker als der Durchschnitt, die Arbeitslosigkeit in Österreich nähert sie sich der 4% Grenze.

Gleichzeitig bleibt viel zu tun. Wir haben – aufbauend auf den Erfahrungen mit der Lissabon Agenda auf europäischer Ebene – ein maßgeschneidertes Konzept entwickelt, das angebotsseitige und nachfrageseitige Elemente kombiniert. Nur so kann das gesamte Wachstumspotential ausgeschöpft werden. Die Bildungspolitik ist dabei Teil einer Vielzahl von Maßnahmen, die sich in ihrer Wirkung auf Wachstum und Beschäftigung gegenseitig verstärken. Eine der Säulen dieser Maßnahmen wird die Anhebung der Forschungs- und Entwicklungsquote auf 3% bis zum Jahr 2010 sein. Weitere Elemente sind der massive Ausbau und die Modernisierung der Infrastruktur auf dem Verkehrs-, Kommunikations- und Energiesektor mit besonderer Berücksichtigung von umwelt- und klimafreundlichen Technologien. Besonders erwähnen möchte ich unsere Investitionen ins Sozialsystem, wie etwa die bedarfsorientierte Mindestsicherung. Das Sozialsystem – so wie wir es gestalten – ist nicht Kostenfaktor oder Hindernis marktwirtschaftlicher Dynamik, sondern gesellschaftliche Produktivkraft.

Noch in dieser Legislaturperiode wird eine große Steuerreform zu einer spürbaren Entlastung für Steuerzahler und Wirtschaft führen. Das Steuer- und Abgabensystem wird nachhaltig gestaltet werden, ökologische Aspekte einbeziehen und vor allem beschäftigungs-, investitions- und wachstumsfreundlich wirken. Ziel ist es, einer allfälligen Abkühlung der Konjunktur entgegenzuwirken, unter anderem durch die Stärkung der Kaufkraft jener, die eine höhere Konsumneigung haben. Nur so können wir die Arbeitslosigkeit senken und die Beschäftigung nachhaltig steigern.

Es ist klar, dass Investitionen in Bildung Investitionen in die Zukunft unseres Landes sind; die Wachstumswirkungen werden nicht sofort spürbar sein. Ich glaube aber, es geht um viel mehr als um ökonomisches Wachstum. Es geht letztlich darum, dass alle die Chance bekommen, an einer Wissensgesellschaft teilzuhaben. In Abwandlung des Titels des berühmten, 1975 erschienenen Buches des amerikanischen Ökonomen Arthur Okun[1], möchte ich abschließend einen Grundsatz in den Raum stellen, der insbesondere für die Bildungspolitik des 21. Jahrhunderts gelten sollte: „Equality and Efficiency: There is NO Tradeoff".

[1] *Okun, A. M. 1975. Equality and Efficiency: the Big Tradeoff. The Brookings Institutions Press.*

Joaquín Almunia
European Commissioner for Economic and Monetary Affairs
European Commission

Taking Advantage of Globalisation: the Role of Education and Reform in Europe

Ladies and Gentlemen,
I would like to thank the Oesterreichische Nationalbank, and in particular Klaus Liebscher, for inviting me to participate in this conference on the role of human capital in the modern economy.

I believe it was a native of this city, Peter Drucker, who back in the 1960s was one of the first to recognise the value of employees that can produce ideas, knowledge, and information. In today's globalised world, the need for a European economy that is built on knowledge and innovation and which makes good use of its human resources is widely recognised. And yet Europe continues to fall short of achieving this requirement.

This morning I would like to outline the benefits that enhancing Europe's human capital can bring, not only in terms of economic growth but also for individual prosperity and a more equal and cohesive society. I will stress that if we want to reap these benefits, we need to embark on a comprehensive strategy of reforms, including a targeted effort to raise the efficiency of public spending on education, research and development (R&D) and innovation.

But to begin with I would like to recall the far reaching changes taking place as a result of globalisation, and the place that the EU is taking at the heart of these developments.

Opportunities and Challenges of Globalisation

When 50 years ago the Treaty of Rome was signed and the EU was born, it was intended to tackle very European challenges, to confront the difficulties of a continent divided by the Cold War and scarred by memories of the World War II. Today our future as Europeans cannot be build looking inwards, loosing the perspective of the global scale of the challenges faced by our societies. Security, climate change, energy, immigration, trade and investment flows are only some examples of the issues where our internal policies are tightly influenced by global developments.

Overall, I believe that globalisation is a positive development that presents many new and significant opportunities. And a strong Europe is, in my view, the only way to capitalise on the new global opportunities of the 21st century.

In the economic front changes are far reaching and unprecedented in pace. It is fair to say that the economic landscape has been fundamentally redrawn over the last two decades, with growth in emerging economies, such as China, India and Brazil, lifting millions of people out of poverty and shifting the pattern of global trade and investment flows.

As the world's largest exporter, the EU benefits directly from the expansion of its world partners. The strength of the EU economy is being supported by a growing demand for European exports and investments from emerging economies. At the same time European consumers are benefiting from having access to cheaper imports and a wider variety of goods and services.

But while globalisation offers a multitude of opportunities for European companies and consumers, fears are running high that adjustment

to the increased competition that globalisation entails is a threat to jobs and wage income.

It is true that the very dynamism brought by globalisation sometimes creates painful dislocations. A shift in consumer demand, the advent of new technology, or new competition leads to the closing of some factories or causes the demand for certain skills to decline.

Nevertheless, even though adjustment can be a costly and uncomfortable business, resorting to protectionism and trying to shield jobs and industries from international competition have greater opportunity costs. A "fortress Europe" is simply not possible in our highly interconnected world; let alone desirable. Trying to hinder the adoption of new technologies, obstruct trade and investment flows or close our borders to migration would do far more harm than good, only serving to reduce economic efficiency, income and employment opportunities in the long run.

In my view, it is in Europe's interest to turn around the arguments and focus on how we can maximise the opportunities that globalisation offers. And lets keep in mind that these opportunities are not only economic.

The European Response

In our efforts to secure a bright future for Europe in a global economy we can build of three pillars.

First, Economic and Monetary Union (EMU) provides us with a very solid foundation. The euro acts as an anchor for economic stability, keeping inflation historically low and supporting growth and employment. Indeed, with growth currently above the long term average, unemployment at its lowest level in 15 years and the EU expected to create 9 million new jobs over the period from 2006 to 2008, our economic prospects are looking bright.

These achievements notwithstanding, it is clear that the euro and EMU as a whole face challenges. Raising potential growth, enhancing adjustment to economic shocks, putting Europe's fiscal house in order and ensuring a successful enlargement of the euro area will be key issues for the coming years. As monetary union approaches its first decade, and with the benefit of analysis covering a full economic cycle, the Commission will present next year priorities for action to strengthen EMU in the years ahead.

Second, we should take advantage of having the world's largest internal market. It is a vital tool for helping European companies prepare for, and compete in, the global marketplace. The European Commission is currently seeking to further strengthen the Single Market by establishing priority areas for further integration, such as in the financial services sector, in order to enhance its role as an open and competitive trading bloc in the 21st century.

Third, we should build on the renewed Lisbon Strategy for Growth and Jobs. With its focus on reforms that create employment and raise productivity, the Lisbon strategy represents another key pillar of the EU's response to globalisation. In December this year the Commission will present its proposal for the review of the Integrated Guidelines for the period from 2008 to 2010. Tackling the challenges of globalisation will remain in my view at the core of our strategy.

Making Better Use of Human Resources

Let me now turn my attention to the importance of improving human capital, a subject that is at the core of today's conference. It is my firm belief that, despite the efforts made so far, this crucial resource – our people – is still underutilised in Europe. In the age of globalisation, nothing will contribute more to our economic success in the future than education and knowledge. Developing our comparative advantage in high-value added activities requires a dynamic framework where innovation and R&D, fostered by excellent education systems, can spur productivity and job creation.

Over the last years all Member States have formulated policies aimed at stimulating private R&D and education. For example, countries such as Austria have introduced or strengthened targeted tax incentives to stimulate R&D spending. Member States have also implemented various measures to upgrade the quality of general education and to increase the use of Information and Communication Technologies (ICT) in education and training. Austria is prioritising the development of international centres of excellence and aims to build a new university centre of excellence.

But despite this good progress the EU is losing attractiveness for R&D investments relative to the U.S.A. and some emerging economies. The battle for knowledge and innovation is only half won and therefore further efforts must be made by each Member State. The EU must remain an attractive location for companies to locate their R&D facilities, and it must be able to train and retain its brightest people.

Tackling Inequality through Opportunity

But enhancing human capital is not just beneficial for economic growth and competitiveness. Better education systems and a skilled workforce can also contribute to the maintenance of an equal and cohesive society. This is a key principle of our European Social Model.

With concerns mounting over the divide between rich and poor, income inequality has become a hot topic of discussion. Some analysis shows that income mobility has fallen since the

1970s and alongside fears about globalisation the voices against inequality are growing.

Equality of opportunity should be at the heart of our societies. And the most effective way of ensuring that economic opportunity is as widely distributed as possible through efficient and effective education systems.

Improved educational achievement of the population increases employability and stimulates social cohesion. Employment rates tend to be correlated with education levels. In 2005, the EU wide average employment rate for the low-skilled was 46%, for the medium-skilled 69%, and for the high-skilled 83%. It is clear that in Europe the prospect of finding a job increases with educational qualification.

At the same time, over past decades, the real wages of workers with more years of formal education have increased more quickly than those of workers with fewer years of formal education. This is possibly due to the fact that technological advances have raised the productivity of highly skilled workers more than that of low skilled employees, causing the real wages of highly skilled workers to increase at a faster rate. Although this is not the only reason to explain income inequality, it is clear that the larger returns provided by education and

skills is an important factor behind the long-term divergences in wages.

Overall, policies that boost our investment in education and training can help reduce inequality while expanding economic opportunity.

A Re-Direction of Public Spending

Let me now turn to the role of government spending. One means of enhancing human capital and facilitating the development of Europe's knowledge economy is through more effective government spending. There is a great deal of scope in the EU for the public sector to channel spending away from inefficient expenditure items towards more growth enhancing budgetary areas such as education and R&D.

Everybody would benefit from a systematic effort to measure the relative efficiency and effectiveness of alternative policy options. After all, higher public spending does not automatically equal high quality public services. In the area of education, for example, recent research by the OECD suggests that there is ample room for efficiency gains. Portugal, Austria and Finland, for example, spend nearly the same amount on education (around 5.6% of GDP), but according to the PISA study differ widely in terms of the performance of their students. I understand that these results have generated a lot of discussion in your country.

It is also important to bear in mind that increased efficiency in public spending will be instrumental in dealing with the increased budgetary pressures associated with ageing populations. As part of strengthening the preventive arm of the Stability and Growth Pact the European Commission will increasingly pay attention over the coming years to the effectiveness and efficiency of public spending and stimulate Member States to exchange best practices in this area.

The Crucial Role of a Broad Reform Strategy

However, improvements in the education system or increased spending in Research and Development will not be sufficient on their own to equip Europe face the challenge of globalisation. They need to be embedded within a broader strategy aimed at supporting the inevitable adjustment process.

Product Market Reforms

In product markets, competitive conditions have continuously changed with the deepening of the Single Market, EU enlargement and the introduction of the euro.

National competition authorities and regulatory bodies have been strengthened in a number of countries, including Austria. Major steps have been taken to liberalise network industries and as result productivity growth has accelerated and relative price levels have declined. Moreover, many Member States – Austria is a good example on that front – are taking measures aimed at reducing the regulation burden and enhancing the business environment, especially for SMEs.

In my view continuous product market reforms should inject a new dynamism into our economies by eliminating excessive and unnecessary regulatory burdens on businesses and by facilitating market entry and exit of firms. The Commission is going to make proposals on how to establish priorities and tackle these issues in its Single Market Review to be present in the autumn.

Labour Market Reform

Increased competition on product markets has been complemented by measures taken in several countries to increase the flexibility of their labour markets. Over the past five years, countries have liberalised employment protection legislation for temporary contracts, reduced the tax wedge to "make work pay" and introduced reforms to public pension systems. Overall, these reforms are delivering results. The utilisation of labour has increased, leading to the creation of 10 million jobs in the EU since 2000.

But while it is true that labour productivity has accelerated, rising in 2006 for the first time this decade at a faster rate than the U.S., Europe still suffers from low productivity in the services sector, an area which covers 70% of modern economic activity.

And despite the falling rates of unemployment in the EU, the figures for youth unemployment are still unacceptably high. Many Member States, including Austria, could do more to improve the skills of disadvantaged young people. At the same time, not enough is being done to make labour markets more flexible. In many countries, benefit systems still create disincentives to work and the capacity of labour markets to adjust to a changing environment remains insufficient. Labour market reforms should enable workers to move smoothly from declining to expanding activities, thus easing tensions in the adjustment process.

Meeting the broader challenge from globalisation requires reforms that increase flexibility without increasing people's uncertainty. In my view the experience in many Member States shows that job protection is not essential as long as the job holders are secure that they will find another job. The Danish experience with "flexicurity" is the one that most people talk about but there are other models. There is no "one fits all solution". Therefore, the Commission will present a Communication on "flexicurity" before the summer setting a framework for promoting job flexibility in combination with employees' security.

Conclusion

Ladies and Gentlemen, I would like to conclude by saying once again that the increasingly globalised world offers us multiple opportunities, but also creates a number of challenges. A strong and integrated European Union can provide us with the right response, helping us to take advantage of the opportunities and to meet the challenges head-on. In my talk today, I have focused on three key aspects of such a response. Let me recall them.

First, it is important to enhance human capital. Better educated and skilled people are more likely to find their place in the new international division of labour and have a greater capacity to adjust to the challenge of globalisation.

Second, increased investment in human capital does not necessarily imply a rise in public budgets for education and training. In the light of budgetary constraints, we have to use the resources available in the most efficient and effective way. It is a question of value for money.

Third, measures that encourage investment in education and training are most effective when embedded in a comprehensive reform strategy. The Lisbon Strategy for Growth and Jobs provides a broader framework that creates the conditions for increased investment in human capital and a successful response to the globalisation challenge.

Thank you for your attention.

Lucas D. Papademos
Vice President
European Central Bank

Education, Financial Markets and Economic Growth

Introduction

"Upon the education of the people of this country the fate of this country depends", British Prime Minister, Benjamin Disraeli, observed over 100 years ago with great prescience. Today, his insightful observation about the crucial importance of education and human capital for social welfare and economic performance of their economies is widely recognised, especially in advanced countries, with their increasingly knowledge-based economies. In Europe, the Lisbon Strategy has placed education high on the policy agenda – together with some key structural reforms in product, labour and capital markets – in order to make Europe a more competitive, knowledge-based and dynamic economy. It is, therefore, highly appropriate and very much appreciated that the OeNB has devoted its 35th Economics Conference to the topic of "Human Capital and Economic Growth". Joining you for this conference is a pleasure and a privilege, and I am delighted to address this distinguished audience.

Education contributes significantly to economic growth and welfare through various channels and in many ways. First, I will review these channels and assess their relative importance on the basis of the available empirical evidence regarding the quantitative significance of the effects of education on a number of key determining factors of growth. In particular, I will examine the role of education in accounting for differences in economic growth across countries and regions, as well as the growth performance of different sectors within our economies. Second, I will address the role of the financial sector in fostering economic growth, concentrating on how the development, efficiency and stability of financial markets can contribute to the dynamism and growth of other sectors and the economy as a whole. I will then explore how education, research and the diffusion of knowledge have supported and facilitated the development of financial markets, and how education can further contribute to fully realising the benefits of financial innovation, thereby supporting our economies' growth performance. Finally, I will draw some conclusions regarding the implications of our analysis for public policy and the effectiveness of monetary policy.

Education and Economic Growth

Through which channels does education foster economic growth? Economists have tried to explain the large cross-country variation in economic growth and, more generally, welfare, in terms of differences in the contribution of factors of production and their overall efficiency. Growth theories – both the extended neoclassical model and the new "endogenous" growth theories – specify the economy's aggregate output as a function of capital, employed labour services, that is hours worked by the economically active population, and a measure of technological progress. Capital is broadly defined to include both physical and human capital. Technological progress is usually described as the process that determines how efficiently all factors of production

are used; that is, it measures total factor productivity. This general theoretical specification implies that the growth rate of per capita aggregate output can be expressed as the sum of real investment (capital deepening), human capital accumulation, the rate of change of labour utilisation and total factor productivity (TFP) growth. The "growth accounting" framework employed in empirical analyses, which need not be based on concrete analytical foundations, uses the same, or a similar, decomposition of output growth in terms of

its basic determinants. This analytical framework provides a useful means for examining and assessing the various channels through which education fosters growth.[1] It should be kept in mind, however, that this framework depends on several simplifying assumptions that may impose limitations on the analysis. It also does not take into account explicitly the potential effects on economic efficiency of "social capital" and human development; that is, the set of institutions and social values that underpin the functioning of markets and can influence the behaviour of economic agents.

Direct Effects of Education on Growth

Education affects economic growth both directly, since it is a key determinant or component of human capital, and indirectly, by influencing the other factors of production and total factor productivity. Human capital is a broad concept which is determined by education – the quantity and quality of schooling – as well as by on-the-job training and learning, cognitive skills and the health status of the labour force (as proxied, for example, by life expectancy).

The direct positive effects of education and, more generally, human capital on growth have been demonstrated by empirical analyses employing both macroeconomic and microeconomic data.[2] Several empirical studies show that countries that are more affluent are also richer in human capital. This is illustrated in chart 1 that shows the relationship between the average number of years of schooling (using data from the most recent update of the Barro-Lee dataset) and the real per capita GDP in the year 2000 (using data from the latest update of the Penn World Tables).

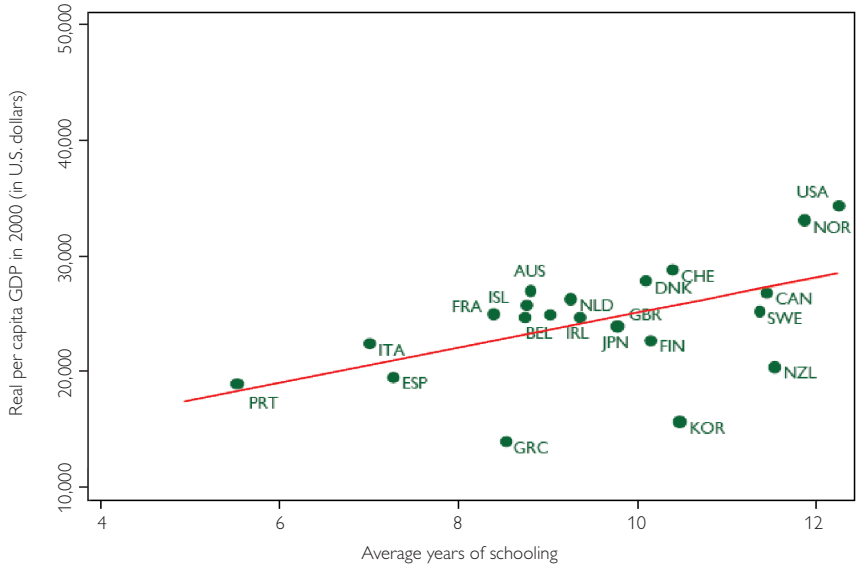
To further illustrate this positive relationship, charts 2 and 3 show that those countries in which the general education level has improved significantly in recent decades have

[1] *See, for example, Mankiw, Romer and Weil (1992) and Caselli (2005).*

[2] *For general surveys of the contribution of human capital and education to economic growth, see Krueger and Lindahl (2001) and Wasmer et al. (2006). De la Fuente and Ciccone (2002) review the literature with specific reference to Europe.*

Chart 1

Income and Education Level – High Income OECD Countries



Source: Barro-Lee (2001), Penn World Tables and ECB calculations.

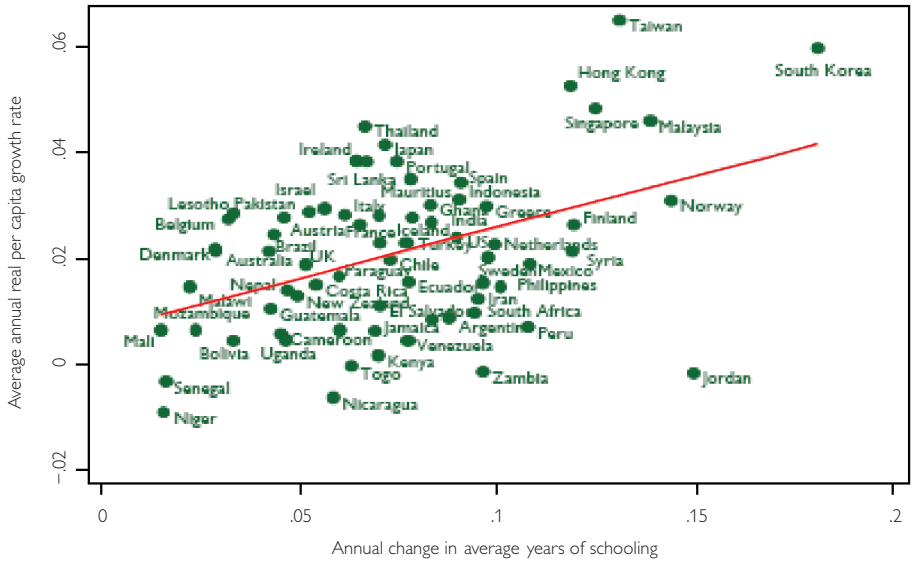
also experienced faster economic growth. For example, East Asian "tiger" economies (South Korea, Taiwan, Hong Kong and Malaysia) have not only been the fastest growing economies in the post-Second World War period, but they have also been those countries where the average duration of school education for the population as a whole has increased most. Recent research has tried to improve the quality of cross-country schooling data[3]. These studies, based on improved statistics, find that there is a stronger correlation between improvements in schooling and growth, even when other features of economic development are taken into account (such as physical capital accumulation or time-invariant country characteristics).

Correlation, however, does not necessarily imply causality. After all, improvement in education and faster growth may be both influenced by other country factors, such as institutional infrastructure, social capital, geography or culture. The correlation between the increase in the average years of schooling and growth (shown in the previous charts) may also be driven by "reverse causality" from growth to education, as individuals invest more in education when the economy's growth performance and prospects are good. It is thus difficult to establish causality by employing cross-country data, because it is almost impossible to control for all the variables that could affect economic performance. Nevertheless, using detailed data on wages for individuals and households, a vast body of literature in the field of labour economics has provided ample evidence that there is a significantly positive and

[3] *See, for example, Doménech and de La Fuente (2006) and Cohen and Soto (2007).*

Chart 2

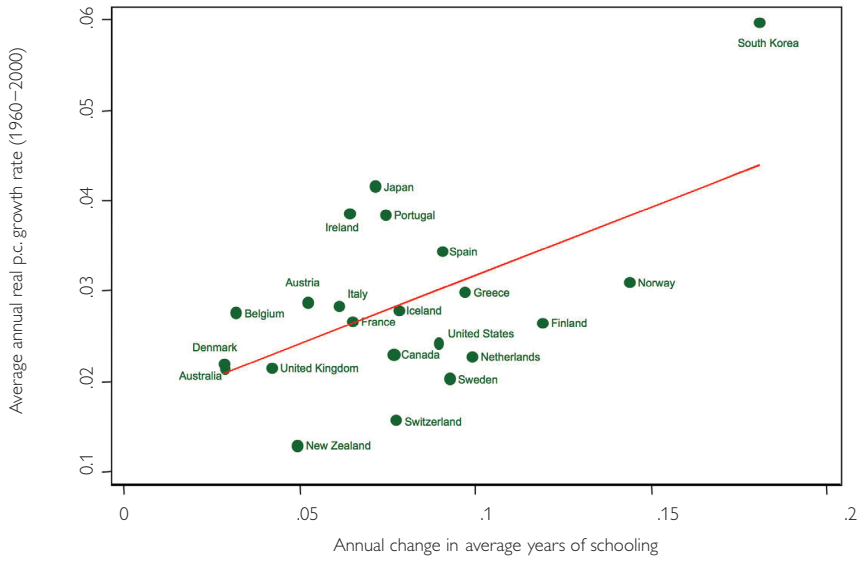
Human Capital Accumulation and Income Growth –
Sample of 65 Countries, 1960–2000



Source: Data from Barro-Lee (2001), Penn World Tables and ECB calculations.

Chart 3

Human Capital Accumulation and Income Growth –
High Income OECD Countries, 1960–2000



Source: Data from Barro-Lee (2001), Penn World Tables and ECB calculations.

robust causal relationship between the years of formal schooling (at the primary, secondary and tertiary level) and wages. This evidence suggests that the private, or "Mincerian",[4] returns on education are within a range of 6.5% to 9%, that is, an additional year of formal schooling is associated with an increase in wages of 7.5% on average over the working life. The richness of micro data also enables us to address the key issue of causality. Labour economists have employed sophisticated econometric techniques and innovative methodological approaches (such as studies of twins who followed different education and life paths) to establish causality between education and private returns.[5] Moreover, the social return on education – that is the benefit of increases in the human capital of the population for the economy and society as a whole – will, in all likelihood, be further increased as a result of human capital externalities. Such externalities arise, for example, through knowledge spillovers from more educated workers to less educated ones.[6]

Education, however, is only one component of the broader concept of human capital, which also involves on-the-job training and learning, as well as cognitive skills. Moreover, the quality of education is at least as important as the number of years of formal schooling.[7] These factors are economically significant. For example, the returns on training could be as high as 5%, which is a rate comparable with the range of estimates for the private returns on the years of formal schooling of between 6.5% and 9%. There is plenty of evidence that points to the importance of the quality of education. This is usually measured by pupil-teacher ratios, public spending on education, the educational level of teachers, as well as students' performance in internationally standardised tests. Measures of the quality of the labour force (at the macro level), based on internationally comparable test scores, explain a significantly larger proportion of the cross-country variation in growth rates than the more simple measure of average number of years of schooling which is usually employed.[8] Micro studies using data on individuals' wages also demonstrate the importance of labour quality. Interestingly, a number of international studies also suggest that the quality of schooling is far more important than the quantity

[4] *The "Mincerian equation", developed by the Polish-American economist Jacob Mincer, specifies a relationship between an individual's education and experience and his or her wages. See Mincer (1974).*

[5] *For en extensive review of the micro evidence, see Card (1999).*

[6] *The importance of human capital externalities in the process of development has been stressed by Lucas (1998) and Azariadis and Drazen (1990), among others. Empirical studies in the United States have, however, failed to detect human capital externalities at the U.S. state and city level (e.g. Acemoglu and Angrist, 2001; Ciccone and Perri, 2006). Moretti (2004) does provide some evidence of sizable (and statistically significant) externalities at the U.S. plant level.*

[7] *Human capital also includes health. However, accounting for health, while of major importance in emerging and developing countries, is likely to be of less importance for the industrial countries.*

[8] *See, for example, Hanushek and Kimko, (2000); Bosworth and Collins, (2003).*

of schooling in explaining the impact of eduction on growth. Put simply, spending time at school is not enough; it is what you learn, how you learn it, and from whom that counts.

The crucial importance of labour quality for Europe's economic performance is also corroborated by recent research at the ECB (Schwerdt and Turunen, 2007), which suggests that improvements in labour quality have made a substantial positive contribution to labour productivity growth in the euro area. Due mainly to a notable increase in college education, the average annual growth rate of labour quality in the euro area is estimated at about 0.5% in the twenty-year period 1984–2005. The relative contribution to productivity of the improvement in labour quality has also increased over time, accounting for up to a quarter of euro area labour productivity growth since 2000.

What is behind the observed – and highly welcome – steady improvement in the quality of employed labour in the euro area? First, the greater number of more educated people in the workforce has led to, an increased share of the total hours worked by more educated workers in the total hours worked.[9] Second, both the business cycle and structural changes in the labour market have positively influenced the human-capital composition of the euro area workforce. By contrast, in the late 1990s, labour quality growth had moderated, mainly reflecting entry into the labour market of low-skilled workers. You may recall the debates about the "jobless recovery" and the labour market policy pursued in the late 1990s, which aimed, in particular, at increasing the employment intensity of growth.

Indirect Effects of Education on Growth

Education influences economic growth not only directly, through its effects on human capital – as explained thus far – but also indirectly, through its effects on a number of other growth determinants, notably: labour force participation, overall labour utilisation, total factor productivity, the skill-bias of technological progress and the complementarity – or substitutability – of physical capital and skills. I will briefly discuss each of these in turn. First, education enhances growth by raising labour utilisation (and, specifically, the number of hours worked per worker). The higher the education level, the higher the participation in the labour force. In other words, if people are more educated, they are more likely to seek or hold a job. Let me provide you with some evidence for the euro area that supports this proposition (see table 1): In 2006, total labour force participation ranged from 70.1% for persons with below secondary education, to 84.3% for persons with above secondary education and 90.6% for persons with tertiary education. In addition, a higher level of education is usually connected with a higher percentage of the labour force being employed. In 2006, the employment rate in the euro area was 83.5% for

[9] *See Schwerdt and Turunen (2007) for evidence of an increased share of the total hours worked by more educated workers and, in particular, of a sizeable increase in the share of hours worked by those with tertiary education.*

Table 1

Euro Area Labour Force Participation

in thousands of persons in the age group 25 to 59

	1996		2006		Difference 1996–2006	
Education	Total	Females	Total	Females	Total	Females
Below secondary						
Total employment	34,197	13,235	32,561	12,810		
Unemployed	5,348	2,619	3,751	1,911		
Inactive	20,445	16,538	15,478	11,737		
participation ratio in %	65.9	48.9	70.1	55.6	4.2	6.7
Above secondary						
Total employment	43,407	18,084	52,171	23,288		
Unemployed	4,220	2,247	4,158	2,109		
Inactive	10,339	7,583	10,485	7,497		
Participation ratio in %	82.2	72.8	84.3	77.2	2.1	4.4
Tertiary						
Total employment	21,581	8,893	31,681	14,933		
Unemployed	2,619	1,532	1,911	1,592		
Inactive	2,463	1,730	3,492	2,492		
Participation ratio in %	90.8	85.8	90.6	86,.9	−0.2	1.1

Source: Eurostat, Labour Force Survey; data for 2006 extends up to 2006 Q3.

persons with tertiary education and only 57.2% for persons with below secondary education.

A most significant and far-reaching contribution of human capital to the European economy and other advanced economies stems from its positive effect on total factor productivity (TFP). Empirical studies suggest that countries that are richly endowed with human capital tend to use existing technologies better, and firms and entrepreneurs in these countries also innovate much more. Building on an early contribution by Richard Nelson and Edmund Phelps (1966), the new "endogenous" growth theories have stressed the role of human capital in sustaining long-term growth, because it enables economies rich in human capital to catch up with the technological frontier and innovate.[10] In line with these theories – which have also emphasised the importance of research and development (R&D) and entrepreneurial activity – cross-country empirical studies show that human capital accelerates progress towards the technological frontier (e.g. Benhabib and Spiegel, 1994). There are valuable lessons for the advanced EU Member States, because the contribution of human capital is especially important for economies that are closer to the technological frontier and which thus depend more on innovation than imitation.[11]

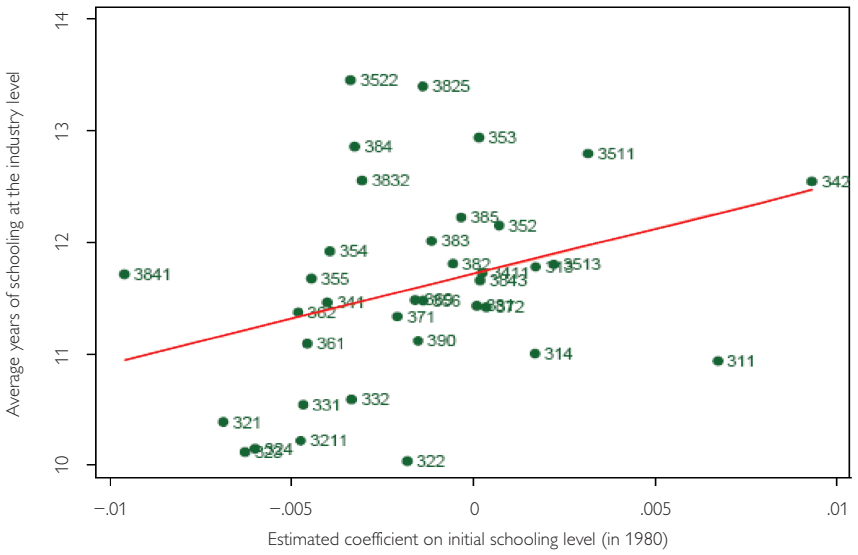
The role of human capital, and education in particular, in fostering innovation and a rapid adoption of technological advances has been crucial over the past decades, when technology has been "biased" towards highly-skilled labour. There is now a consensus that in the 1980s and 1990s (and even in the 1970s), technologi-

[10] *See, for example, Romer (1990), Grosman and Helpmann (1991), and Aghion and Howitt (1992).*

[11] *For a formalisation of this intuition, see Acemoglu, Aghion, and Zilibotti (2006).*

Chart 4

Education and the Skill-bias of Technological Change–I



Source: Ciccone and Papaioannou (2005) and UNIDO.

Note: See table 2 for explanation of ISIC code.

cal progress favoured educated and highly-trained workers.[12] For example, the private return on education in Europe and the United States rose from about 6.5% to 7.5% in the early 1970s to 10% in the early 1990s. This increase was almost exclusively driven by college graduates and highly-trained workers, who were the beneficiaries of the higher skill-bias of recent technological innovation. If we analyse this rather general result in greater depth, and assess the effect of education in facilitating technology adoption and the skill content of recent technological innovation, we find that countries with abundant human capital managed to better utilise technological innovations in skill-intensive sectors in the 1980s and 1990s (Ciccone and Papaioannou, 2005). Moreover, it was precisely the industries with high human capital intensity that experienced higher total productivity growth globally. Chart 4 illustrates this point. It shows the relationship between the cross-country marginal return on human capital at the industry level and the industry skill-intensity. There is a positive relationship between the effect of schooling on industry growth and the skill-bias of an industry. These findings confirm our expectations that education is far more important for the growth of R&D intensive sectors, such as drugs and pharmaceuticals, and computer and office equipment than for footwear and textiles.

[12] *See, among others, Acemoglu (1998, 2002); Caselli and Coleman (2006); Berman, Bound and Machin (1998).*

Table 2

Industry Measures of Human Capital Intensity (Dependence)

ISIC Code	Industry Name	HCINT
3522	Drugs	13.45
3825	Office, computing	13.40
353	Petroleum refineries	12.94
384	Transportation equipment	12.86
3511	Basic chemicals excluding fertilizers	12.79
3832	Radio	12.55
342	Printing and publishing	12.54
351	Industrial chemicals	12.42
385	Professional goods	12.22
352	Chemicals	12.15
383	Electric machinery	12.01
354	Petroleum and coal products	11.92
382	Machinery	11.81
3513	Synthetic resins	11.80
313	Beverages	11.78
3411	Pulp, paper	11.72
3841	Ship building and repairing	11.71
355	Rubber products	11.67
3843	Motor vehicle	11.65
369	Non-metal products	11.48
356	Plastic products	11.48
341	Paper and products	11.46
381	Metal products	11.43
372	Non-ferrous metals	11.42
362	Glass	11.37
371	Iron and steel	11.33
390	Other industries	11.11
361	Pottery	11.09
314	Tobacco	11.00
311	Food products	10.93
332	Furniture	10.59
331	Wood products	10.54
321	Textile	10.38
3211	Spinning	10.21
324	Footwear	10.14
323	Leather	10.12
322	Apparel	10.04

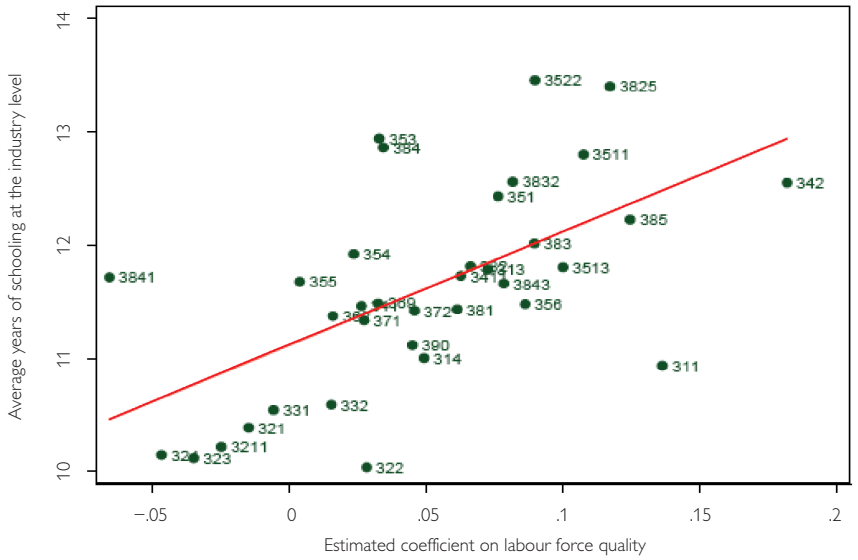
Note: The table reports the average years of schooling of employees for 36 industrial sectors in manufacturing, calculated using U.S. data, on the basis of the International Standard Industrial Classification (ISIC). The series is taken from Ciccone and Papaioannou (2005).

Chart 5 exhibits a similar relationship, but uses educational quality as a proxy for human capital. The results are even more striking, indicating that educated societies were more successful in adopting the R&D intensive technologies of the 1980s and 1990s.[13]

[13] *The skill content of the recent technological revolution has also been a key force for raising inequality. If this pattern continues, then it is fundamentally important for Europe to further invest in human capital: in order to sustain growth and help reduce social inequality.*

Chart 5

Education and the Skill-bias of Technological Change–II



Source: Ciccone and Papaioannou (2005) and UNIDO.

Finally, human capital may foster growth due to so-called capital-skill complementarities. While capital complements both skilled and unskilled labour, it tends to be more relevant for tasks and sectors that use skilled labour more intensively. Recent empirical studies support this hypothesis. Research using very detailed data for the United States shows that capital invested in information and communication technologies (ICT) strongly complements skilled workers in performing complex tasks, while it substitutes low-skilled workers in manual tasks. Similarly, studies on the adoption of computers in the United States over the past three decades clearly show that computerisation is associated with reduced labour input of routine manual tasks and increased labour input of non-routine tasks.[14] This finding also highlights how important it is for Europe to invest in both human and physical capital, since their positive effects on growth will most likely be mutually reinforcing, and thus greater.

Education, Financial Development and Economic Performance

The financial sector, where the complementarity between human capital and physical capital can be expected to be particularly strong, has undergone rapid transformation over the past few decades, especially since the 1990s, partly as a result of the large-scale adoption of advanced information and communication technologies. This sector has

[14] *For the effect of computer adoption on wages and skill upgrading in the United States, see Autor, Katz and Krueger (1998).*

played a central role in fostering economic growth in both advanced and emerging market economies. This role has been supported and facilitated by education in a broad sense – involving both teaching and research in the fields of finance and the new technologies – and by the effective use of the acquired knowledge in practice. For these reasons, I would like to focus now on the relationship between financial sector development and economic growth, and the contribution of education to the development, efficient functioning and stability of financial markets.

Through which mechanisms does the financial sector foster economic growth? Broadly speaking, the financial system can affect economic growth by influencing the investment and saving decisions of economic agents and by fostering innovation and productivity. A well-functioning financial system should *(i)* improve the available information on investment opportunities and reduce informational asymmetries; *(ii)* facilitate the diversification and management of risk; *(iii)* contribute to better corporate governance; (*iv)* mobilise and pool savings; and *(v)* foster the exchange of goods and services. The key functions of the financial intermediation process, particularly information availability and transformation, risk diversification and management, and corporate governance, clearly indicate the central role of education, knowledge and technological advances in the development and efficient functioning of financial markets. The better a financial system performs these functions – that is, the more developed and efficient it is – the greater its contribution to economic growth.

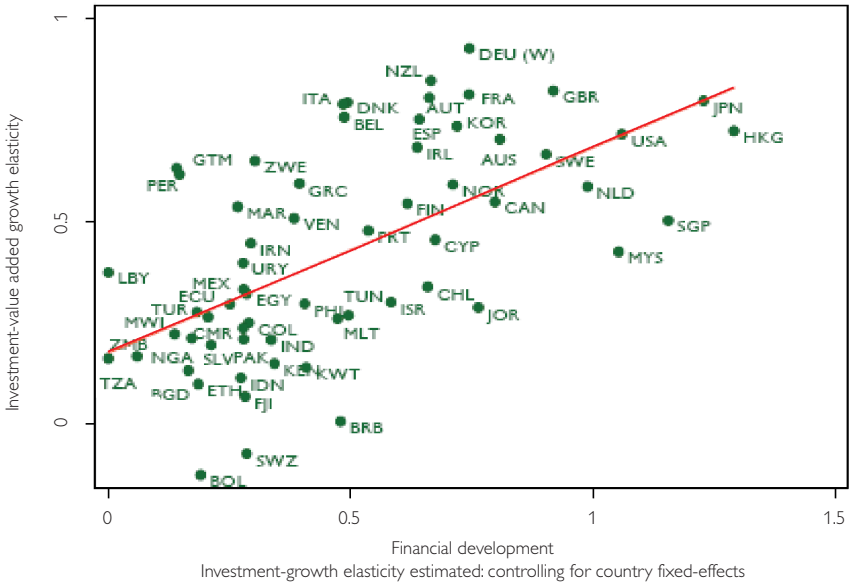
The empirical evidence supporting the proposition that financial development and integration promote economic growth is substantial.[15] Numerous studies have shown that countries with more liquid capital markets and developed banking systems grow on average faster, and that financial sector reforms and financial liberalisation policies positively affect investment and GDP growth. For example, evidence from emerging and developing countries shows that financial liberalisation policies are followed by a 0.5%–1% increase in investment and a significant fall in the cost of capital (by 100 basis points on average). More generally, the evidence from cross-country and country-specific studies (in both advanced and emerging market economies) shows that deregulation, privatisation and financial development result in an acceleration of growth and a sustained increase in total factor productivity (e.g. Bekaert, Harvey, and Lundblad, 2005). Financial development is especially beneficial for industries which for technological reasons depend predominantly on external finance (Rajan and Zingales, 1998; Guiso, Jappeli, Padula, and Pagano, 2005).

Another important channel through which a well-developed financial system fosters innovation and sustained growth is by facilitating the

[15] *Levine (2005) provides a thorough review of the literature. Papaioannou (2008) surveys studies that mostly focus on advanced economies.*

Chart 6

Financial Development and Capital Reallocation – Sample of 65 Countries



Source: Ciccone and Papaioannou (2007); UNIDO data and methodology based on Wurgler (2000).

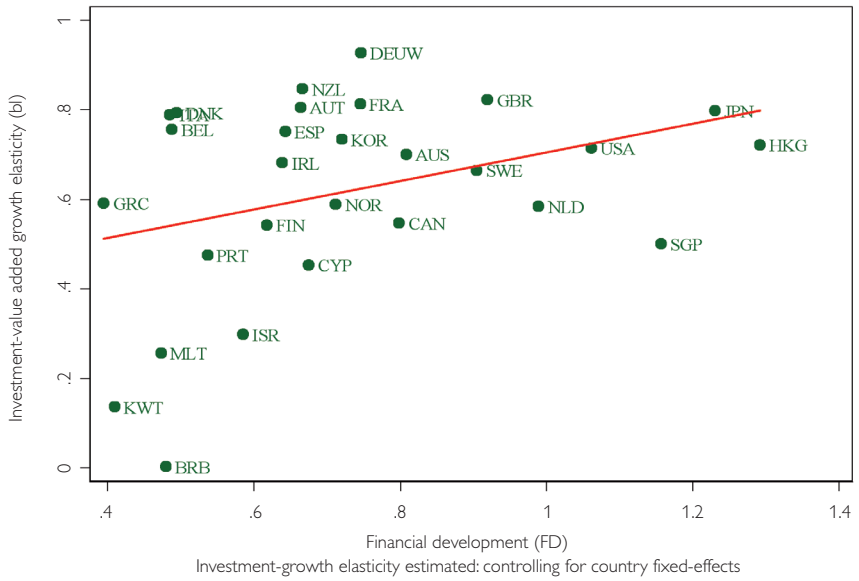
rapid re-allocation of capital from declining industries to fast-growing sectors, and, in this way, raising aggregate productivity in the economy.[16] Recent studies have confirmed this proposition, which was first put forward one hundred years ago by a great Austrian, Joseph Schumpeter. He was among the first to emphasise the catalytic role of well-developed financial intermediaries in the process of "creative destruction". The efficient functioning of this Schumpeterian capital reallocation mechanism is especially relevant in advanced economies, such as the euro area, where the promotion of entrepreneurship and increased openness to competition are key to raising productivity and growth.[17] Recent empirical research at the ECB demonstrates that the larger and more developed the financial markets, the greater the efficiency with which capital is reallocated across sectors. Charts 6 and 7 show the relationship between a measure of capital efficiency and an indicator of financial development for a sample of 65 countries and for the OECD sample of high-income countries. The higher a country scores on the vertical axis, the faster its industries respond to investment opportunities; the horizontal axis denotes the size of the financial market: the upward slope of the line clearly

[16] *See, among others, Fisman and Love (2007), Wurgler (2000), Ciccone and Papaioannou (2006).*

[17] *See Papademos (2006, 2007); Strahan (2003) for a review and assessment of the U.S. evidence; Bertrand, Schoar, and Thesmar (2007) for the aftermath of French financial reforms in the mid-1980s; and Guiso, Sapienza and Zingales (2004) for the Italian experience.*

Chart 7

Financial Development and Capital Reallocation – High-Income Countries



Source: Ciccone and Papaioannou (2007); UNIDO data and methodology based on Wurgler (2000).

indicates that capital is reallocated more efficiently in financially advanced countries.[18]

Financial development is thus manifestly beneficial for growth, but what is the role of education and research in this process? It would be useful to investigate further the relationship between education and technological advances, on the one hand, and financial development and economic growth, on the other. Conceptually, such a link appears plausible, if not perfectly clear. Progress in the theory of finance and management, employing mathematical and statistical techniques, combined with the exponential growth in computing power and the diffusion of information and communication technologies – which made the application of theoretical advances technically feasible – have supported the creation of new, innovative, sometimes complex, financial instruments and the development of alternative investment vehicles. Market participants – financial institutions and investors – further elaborated this knowledge, which had been developed initially in universities, and applied it in practice, fruitfully interacting with centres of higher education. In addition, the education pertaining to the organisation, management and governance of firms also contributed to financial development and enhanced productive efficiency. The increasing breadth and sophisti-

[18] *These figures draw on Ciccone and Papaioannou (2007) and Hartmann, Heider, Lo Duca, and Papaioannou (2008) and are based on a methodology proposed by Wurgler (2000). Data taken from UNIDO (2005 Edition). A certain caution needs to be applied in interpreting these figures, as both the capital efficiency measure and the indicators of financial development can only be proxies for the theoretical concept of the efficiency of capital allocation and financial intermediation. That said, the key finding of a clear positive relationship remains valid.*

cation of financial markets, in turn, have been conducive to economic growth, for the reasons I have outlined above. Intuition and anecdotal evidence suggest that these are reasonable propositions. It would be useful to examine the available evidence in a systematic manner and try to quantify and estimate the contribution of education and research to the development and efficiency of the financial system and the resulting direct and indirect effects on total productivity growth. It would also be valuable to examine how education and the diffusion of knowledge on risk measurement, assessment and management can help to better safeguard financial stability, by enhancing the resilience of the financial system to shocks and the potential materialisation of risks associated with the intermediation process.

Needless to say, the role of education in fostering financial development, efficiency and stability is a very broad theme. However, I would like to point out another important issue concerning the link between education and financial development which has recently attracted attention and led to some interesting findings. This pertains to the fact that it is not only the education and sophistication of bankers, brokers, analysts, asset managers, or risk management specialists that determine the extent to which the full benefits of financial development and risk diversification can be reaped; it is also the financial education and literacy of all savers and investors.[19] On that front, I am afraid, the news is not good: the evidence indicates that even in advanced countries, financial illiteracy is widespread. For example, a recent study in the United States (Lussardi and Mitchell, 2006) found that on average only 50% of those close to retirement (aged 50+) could correctly answer two simple questions regarding interest compounding and inflation, and the scores were worse when questions were raised about risk diversification. Evidence from other industrial countries is similarly alarming. Of course, these averages conceal differences: more affluent people with higher education, especially those with college education, tend to be more financially literate than people from lower-income groups. However, this fact offers no solace.

The implications of financial illiteracy are far from negligible. Proper retirement planning, the ability to exploit diversification opportunities and the propensity to invest in high-return and high-risk assets are more widespread among financially literate households (Lussardi and Mitchell, 2006, 2007; and Calvert, Campbell and Sodini, 2005). Enhancing financial literacy is essential, especially in economies with ageing populations and the expected progressive shift away from public pension provision, based on pay-as-you-go schemes, to privately funded schemes where people have to assume responsibility for

[19] *The OECD (2005) defines financial education as "The process by which financial consumers/investors improve their understanding of financial products and concepts and, through information, instruction, and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being." The importance of financial literacy for household finance is also stressed by Campbell (2006) in his Presidential Address to the American Finance Association.*

their own retirement savings. Aristotle's wisdom that "education is the best provision for old age", understood also in this specific sense, still holds today; and should provide guidance for public policy. Programmes to enhance people's ability to understand some basic financial and economic concepts (such as interest compounding, percentages, the difference between nominal and real returns, etc.) have demonstrated their usefulness, especially for less-educated participants. The best way, however, to enhance financial literacy so as to fully realise the benefits of financial development is to further invest in education, for there is clear evidence of a strong relationship between the level of schooling and financial literacy.

Policy Implications

Overall, there is ample and robust evidence that education plays a key role in enhancing economic performance, especially in those sectors where productivity and labour utilisation are relatively low. Therefore, improving education – in quantitative and qualitative terms – has to be at the heart of policy measures aimed at raising the growth potential of the euro area in a sustainable manner. The Lisbon Agenda aims precisely at this. Given the lower productivity growth in the financial sector compared with the productivity gains achieved in other sectors in the euro area, but also relative to those recorded in the United States, policies that can accelerate the integration and development of European financial markets are essential. They will help to raise the European economy's growth potential, enhance its capacity to adapt to changing global conditions and structures, and strengthen its resilience to shocks. In particular, further financial integration and development in the euro area would allow for a more balanced systemic response of its economy to asymmetric shocks – which is, of course, of particular relevance for the smooth functioning of Economic and Monetary Union. The improved risk-sharing opportunities offered by an integrated financial market should also help to further synchronise business cycles across the euro area and reduce

the volatility of output and employment. Last, but by no means least, more integrated and efficient financial markets will also enhance the smooth and effective transmission of the single monetary policy impulses across the euro area. This brings me to my final point: the links between education and monetary policy.

What are the potential implications of a rise in the level of education for the conduct of monetary policy in the euro area? Improvements in education and labour quality affect the transmission of monetary policy in two principal ways. First, by fostering higher productivity growth and labour utilisation, a higher level of education raises potential growth and thus the "speed limit" of the economy, meaning that the economy can

attain a faster rate of sustainable growth that is compatible with price stability. The second channel through which education affects the transmission of monetary policy relates to the efficient functioning of national labour markets and the role of labour mobility as an adjustment mechanism, which is especially relevant in a monetary union. Increased labour force participation and mobility of high-skilled workers will improve job-matching efficiency in the euro area, especially when there are certain skill shortages. To the extent that more educated workers display greater mobility across firms, sectors and borders compared with workers with fewer qualifications, a higher level of education can contribute to containing the size of economic fluctuations and mitigating the effects of shocks, because labour markets can adjust faster and in a manner that reduces output and employment volatility.

Concluding Remarks

In recent quarters, economic activity in the euro area has been expanding at a solid pace and conditions are in place for the ongoing expansion to continue at sustained rates. The improved growth performance of the euro area economy reflects the positive influence of the policies pursued and the reforms that have been implemented over the past few years. It is essential to preserve the favourable conditions that are fostering sustained growth and to step up the efforts that can enhance the dynamism and growth potential of the euro area economy.

Monetary policy has made a decisive contribution to fostering sustainable growth by having established an environment of price stability and by ensuring that medium to longer-term inflation expectations remain solidly anchored at levels consistent with price stability. This is what our policy will continue to do. The ECB's Governing Council remains strongly vigilant and ready to act in an effective, firm and timely manner to ensure that price stability is preserved over the medium and longer term.

At the same time, the euro area's potential for higher sustained growth and its capacity to effectively absorb economic shocks can be further enhanced by the implementation of appropriate structural reforms that increase productivity and employment growth and improve market efficiency and flexibility. In my presentation, I have examined and assessed the links between education and the growth performance of our economies. There is ample and robust evidence that more and better education can foster productivity growth and raise labour utilisation. Moreover, I have emphasised the important role which the development of financial markets can play in fostering innovation, entrepreneurship and productivity growth and I have argued that education has contributed and can further contribute to the development and stability of the financial system. What counts now is to use these insights and implement the necessary policy measures to enhance the quantity and quality of education in Europe. After all, as Anton Chechov reminds us, "knowledge is of no value unless you put it into practice."

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Growing Economies and Reducing Poverty in Developing Countries by Investing in Youth's Human Capital

Human capital and growth, the topic of this year's 35th Annual Economics Conference of the Oesterreichische Nationalbank, is at the core of the poverty reduction strategy for developing countries. In its *World Development Report (WDR) 1990: Poverty,* the World Bank reviewed country experiences and concluded that rapid and sustainable progress in reducing poverty required a two-part strategy. The first element is the pursuit of a pattern of growth that ensures productive use of the poor's most abundant asset – labor, or more broadly, their human capital. The second element is to increase the capacity of the poor to take advantage of these opportunities by helping them to improve that asset. At the time, the priority for investments in human capital was to provide the poor with access to basic social services, especially primary education, primary health care, and family planning.[1] The target of many of these policies was the very young. Variations on this strategy have inspired development plans for the past couple of decades.

This year's WDR, *2007: Development and the Next Generation* amplifies and, at the same time, refines this theme.[2] Specifically, it argues that, if countries are to sustain the substantial progress they have made in the past 20 years, they now need to broaden their focus to developing the human capital of those who are a little older – those aged around 12 to 24 years old. Doing so would enable developing countries to take advantage of a unique window of opportunity afforded by temporarily falling dependency rates (known as the demographic dividend). Not doing so risks not only foregoing this opportunity but also alienating a very large cohort of young people, which could have a destabilizing effect on entire societies.

The next section of this paper provides further reasons why developing countries may want to focus on the next generation – today's youth. This is followed by a discussion of why and how it is necessary to refine the basic human capital model in applying it to young people. Three succeeding sections then summarize the WDR 2007's three-part framework for evaluating countries' policies for developing the human capital of the next generation – broadening their opportunities, enhancing their ability to choose among these opportunities, and providing them with second chances in the event that they make poor choices. A brief summary of the benefits and costs of adopting a more comprehensive approach to young people concludes the paper.

[1] *World Bank (1990).*

[2] *Many of the ideas in this paper are summarized from the World Bank (2006). I would like to thank the colleagues who served with me on the team that prepared that report.*

Why Young People and Why Now?

The present global cohort of 1.3 billion young people aged 12 to 24 is the largest in world history. Owing to declining fertility in developing countries, these numbers are on a long plateau, in the sense that they will increase slowly to around 1.5 billion in 2035 and decline gradually thereafter.[3]

Some see these large numbers as a risk to economic and social stability in developing countries. Governments are acutely aware of the higher fiscal costs of providing services to a large cohort with unprecedented levels of access to primary education and child health services. Concerns also abound because of the risk of unemployment. When the post-war baby boom occurred in Europe and the United States, every percentage point increase in the share of young people in the labor force was associated with a half a percent increase in youth unemployment.[4] While no straightforward parallel can be drawn as most developing countries are not experiencing a rise in the share of young entrants into the labor force, it is clear that these countries are experiencing similar difficulties in using the human resources of their youth populations effectively.

The other side of the coin is that this is an unprecedented opportunity for countries to deepen their human capital because of the already strong human capital base of the youth generation and because of the demographic dividend. Despite outstanding challenges, over the past two or three decades, enormous progress has been made in the areas of basic education and health care in developing countries. Primary school enrollment rates in low-income countries outside of China and India rose from 50% in 1970 to 88% in 2000. Average life expectancy at birth worldwide rose from 51 years to 65 years in less than 40 years, largely due to declines in infant and child mortality in the developing world. Making further progress in human capital development will require governments to meet the challenging education and health needs of those aged 12 and over.

The demographic dividend presents another opportunity. Young people today are growing up in smaller families as fertility rates decline. A fifth of adolescents in countries with a total fertility rate of 3 have no siblings, compared with a tenth in countries with a total fertility rate of 5.[5] Declining fertility means fewer siblings per child and less competition for resources within each household. This can be an important factor in encouraging families, and young people, to invest in their own development. What also matters of course is whether government policies foster an overall climate that favors this human capital investment.

While the timing may vary, this fertility transition means that the share of people of working age in the total population is rising in many de-

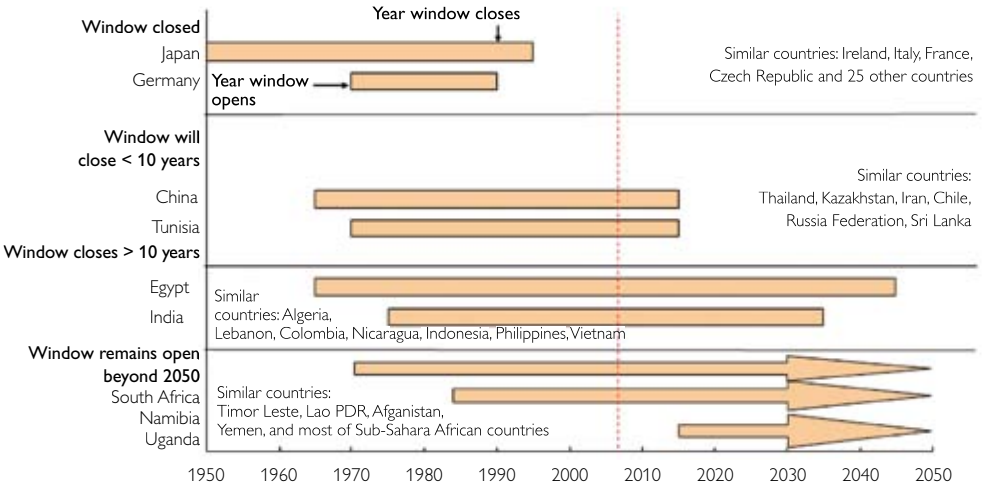
[3] *For this analysis, we relied on the UN's World Population Prospects database (the 2004 Revision). We used the medium variant of the forecasts.*

[4] *Blanchflower and Freeman (2000).*

[5] *National Academy of Sciences and National Institute of Medicine (2005).*

Chart 1

Demographic Windows of Opportunity when Dependency Rates Are Falling



Source: World Bank (2006a).

veloping countries. This expansion in the workforce in a population that has fewer children and elderly to support means that individuals have increasingly more money to invest in human capital. Many developing countries are experiencing declines of this order of magnitude; in others, including many low-income countries, such declines will be happening in the very near future. Thus, the economic opportunity for investing in children and young people is better than ever before.

Combined with the right policies and institutions, the rise in the share of working age population can boost growth. Between 1965 and 1990, the East Asian "tiger" economies grew much faster than those of Latin America, and one study attributes more than 40% of this higher growth to the faster growth in East Asia's working age population combined with better policies on trade and human capital development.[6] With many developing countries now in (or soon to experience) a demographic window of opportunity, a key question is whether they can learn from the experience of the Asian tigers in providing opportunities for the young labor force to develop their human capital and use it productively in work. This window of opportunity of falling dependency rates will not last forever because aging and retirement will cause them to go up again. As shown in chart 1, this window has already closed in richer countries, but for now, it remains open in developing countries.

A Framework for Analysis: Applying the Human Capital Model

What are the policies and institutions that can lead to the right outcomes? The WDR 2007 claims that policies that encourage investments in young

[6] *Bloom and Canning (2004).*

people's human capital during five youth transitions are particularly important:

- Whether they continue to learn beyond primary school age since it is easier to learn when young than when older
- At what age they enter the workforce for the first time because when people leave school, when they begin to work and what kind of job they get will affect their long-term employment prospects
- Whether they stay healthy during a time of experimentation because taking health risks, such as having many sexual encounters or starting to smoke, can have catastrophic effects
- At what age they marry and have children because young people's parenting skills affect the human capital of their children
- Whether they exercise their citizenship, as research shows that the habits of civic engagement are formed early and persist over time.

And what are the priorities for policy action? Economists can still rely on the now classical human capital model to determine these priorities. If the true test of the value of an economic theory is its longevity, then this model passes with flying colors.[7] The basics are simple and empirically testable (and generally validated). An individual will invest in his or her own human capital (whether in the form of an additional year of schooling or on-the-job training or in the form of adopting a healthy lifestyle) as long as the marginal gain from that investment exceeds its added cost. The gains extend over a lifetime and are discounted to the present. If some of these gains accrue to others, then governments need to encourage individuals to take those gains into account as well as the gains to themselves in making their decisions. The government may also need to provide some financial assistance to those poor individuals who are unable to afford to finance the investment in advance despite the likelihood of them making big gains in the future.

However, like all basic models, the elegance of the human capital model comes at the price of simplifying assumptions. One assumption relates to the role played by governments in correcting for any failures of the market. Government policymakers do not behave as the benevolent dictators that the models would have them be, dutifully correcting for externalities and equalizing opportunities for all. Rather, their behavior may depend on their accountability. Are they accountable to the ultimate beneficiaries, to special interest groups, to voters at large, or even to their own families or livelihoods? Getting this right will determine outcomes, as was discussed in WDR 2004.[8] If these policymakers do not feel accountable to young people or if those young people have no platform from which to hold providers accountable, then there are unlikely to be many policies that promote human capital investments in young people.

[7] *Recognized by the awarding of Nobel Prizes to Becker and Schultz (Schultz, 1960).*

[8] *World Bank (2003).*

Another assumption has to do with who is making the decisions about investing in human capital. The model assumes that a young person makes his or her own decisions. However, between the ages of 12 and 24, young people are still subject to the authority of their parents and/or households who still have a say in any decision about the young person's life. But how much influence does each party have? How do they resolve conflicts if they have different views on, for example, whether the young person should work in the fields and contribute to the household's income or continue to go to school? Some extensions to the human capital model include bargaining among household members to determine human capital investments, but these models are restricted to two parties – the spouses – and tend to treat children as passive receivers of parental decisions.[9] In some societies, this assumption is not a valid reflection of the reality of the parental relationship with teenagers, but in others, it may very well describe how young people's opportunities can be limited by social conventions.

A final assumption concerns the motives and preferences of the young person as a decision-maker. The model assumes that human capital investors are well-informed about the benefits and costs of their decisions, discount the future appropriately at the prevailing economic discount rate, account for the risk involved in the investment by comparing it rationally with other risky assets, and have well-formed views not just about their present preferences but also about their future desired consumption bundles as well. But in reality, many young people are inexperienced decision-makers who are only selectively informed about the risks, costs, and benefits of most human capital investments and, even if they wanted to, lack the resources to finance them. Also, many tend to be more myopic and impatient than adults, which may lead them to discount the value of making long-term investments in their human capital. And they are still forming their own identity so that their own preferences for consumption are not well formed and may easily be influenced by their peers (see box). Extensions of the basic model include the explicit modeling of information asymmetries,[10] identity formation,[11] the dynamic effects of cumulative learning,[12] and the synthesis of behavioral science with economic thinking.[13]

[9] *An exception is Moehling (2005) who has studied the bargaining power of working children in the U.S.A.*

[10] *Proposed by Nobel Laureates Michael Spence and Joseph Stiglitz among others. See Spence (1973) and Stiglitz (1975).*

[11] *Proposed by Nobel Laureate George Akerlof (see Akerlof and Kranton 2000), among others.*

[12] *See the work of Nobel Laureate James Heckman and his colleagues (Cunha et al., 2005).*

[13] *See the work of Nobel Laureate Daniel Kahneman and his colleagues (Kahneman and Tversky, 2000).*

Box 1

Neuroscience Meets Social Science – Brain Development in Young People

A decade ago, the prevailing notion was that human brain growth ended at about the age of two. Since then, we have learned that brain growth continues well into adolescence (between the ages of 10 and 19) and into young adulthood. During this period, the brain undergoes a series of changes, and the parts of the brain associated with social skills, problem solving, and identifying emotions mature only by the early 20s. However, this process of brain development cannot entirely explain adolescent decision-making and behavior. Nor does it override the effect of the environment – parents, schools, and communities – in which young people live.

What does this new brain research mean for understanding adolescent decision-making and behavior? Although much more research is needed before definitive policies can be recommended based on the new brain research, it suggests some interesting policy considerations:

- *The loss of neuronal excitation in adolescence is associated with a rise in depression, especially among adolescent females, suggesting a biological basis for the epidemiological finding that gender differences in depression start around the time of puberty. These biological changes combine with external sources of stress to increase the risk of suicide for young people in many countries of the world.*
- *As the brain matures during adolescence, alternations in the synaptic chemicals may influence learning (drugs for attention-deficit disorders improve information transfer at the level of the neuronal synapse). For example, antidepressant drugs may allow certain excitatory neurotransmitters to stay in the space between two brain cells longer than otherwise.*
- *Learning and teaching strategies should be timed to increase young people's neurodevelopmental capacities. Because neurodevelopmental maturation occurs at different chronological ages for different people, their inability to grasp a concept at one age does not mean that they will be unable to learn the material at a later time. This highlights the risk of educational "tracking" based on comprehension or performance examinations at a young age.*
- *Without a fully mature prefrontal cortex, adolescents may be more impulsive than adults and perhaps more susceptible to peer influences. This impulsiveness – especially in reactive decision-making, as when faced with a situation or threatened to make an immediate decision – emphasizes the value of second-chance programs.*

However, it is too early in the research to draw definitive conclusions about brain development and behavior. Also, physical development interacts with the social environment to determine behavior and outcomes. So parental behavior and expectations, effective schools, communities that are youth-oriented and supportive all make a difference in determining young people's behavior and how well they learn complex decision-making skills.

Source: Blum (2006).

These refinements to the human capital model mean that, when examining their present policies to develop the human capital of young people, governments should consider not only whether they are providing enough opportunities for young people to develop and use their human capital but also whether they are developing young people's ability to choose wisely among these opportunities. Furthermore, they need to consider whether they are providing enough second-chance programs to help young people recover in the almost inevitable event that they make some

poor choices. The WDR 2007 refers to these considerations as the three "youth lenses" through which a country's policies and institutions must be seen. The rest of this paper applies these lenses to existing policies.

Broadening Young People's Opportunities

As stated earlier, most developing countries have almost universally succeeded in expanding opportunities for young children, particularly in providing access to primary schools. However, applying a youth lens to these policies reveals at least two important gaps. One is the gap between the quality of the actual education being provided and the skills and knowledge that young people need to succeed in work and life. The other is the gap between the opportunities to continue in school and the opportunities to use the skills learned in school in productive work.

Enhancing the Quality of Human Capital Formation

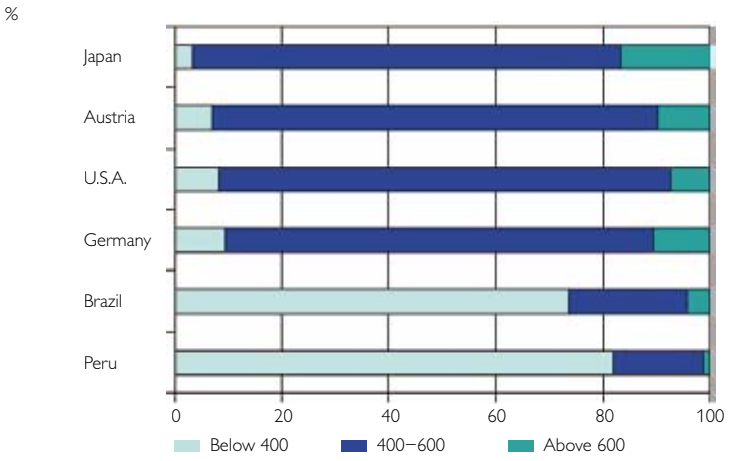
The lesson from the massive expansions in education the 1980s and 1990s is clear – expanding enrollment rapidly can come at the cost of quality. This is reflected in the high enrollment rates but low achievement rates that exist in many developing countries. In Morocco and Namibia, more than 80% of school children stay in school until the last grade of primary education, but fewer than 20% have a minimum mastery of the material. In Ghana and Zambia, fewer than 60% of young women who have completed six years of primary schooling can read a simple sentence in their own language. Young people are already paying the price of this low quality. Many of the large numbers of adolescents who complete primary education do not know enough to be literate and numerate members of society. Looking through a youth lens thus reinforces the need – which has been well-documented in worldwide education monitoring reports[14] – to improve the balance between expanding primary enrollments and ensuring a minimum quality standard.

This pressure is also being felt in secondary schools and universities, especially in middle-income countries as they cater for more students. It is often very difficult to compare the quality of education across countries because there is no single reference point. But a recent study by Rick Hanushek and Ludger Woessman took the results of standardized tests taken by children in 77 countries and attempted to make them roughly comparable by referencing them to a single standard (the U.S.A., since that country participated in all of the standardized tests). They then computed an index of quality and compared the results across all 77 countries. Chart 2 shows the results for six of these countries. Japanese students performed the best among the six. Almost 17% scored 600 and above, and fewer than 4% scored lower than 400, which the authors considered a rough threshold of functional literacy. Countries like Austria, the United States, and Germany did not perform

[14] *UNESCO (2004).*

Chart 2

Distribution of Comparable Test Scores at Secondary Level Shows that Developing Countries Lag Well Behind



Source: Hanushek and Woessmann.
Note: 400 is interpreted as "functional literacy" level; above 600 is considered excellent.

quite as well but were not far off. However, in countries like Brazil and Peru, much larger proportions of their students performed poorly.

Part of the solution is to improve not only the infrastructure of basic and secondary education but also the behavior of teachers and administrators. Improving teachers' incentives to maximize the academic performance of their students and increasing the accountability of school administrators to students and their parents were discussed as priority actions in the WDR 2004.[15]

If education quality is low or if what is being taught in schools is not relevant in the job market, unemployment rates can be high even for some of the most highly educated. Employers also demand quality and relevance from an upper secondary curriculum that should emphasize practical thinking and behavioral skills, as in South Africa, and offer a blend of academic and vocational subjects. Policies that create links between educational institutions and prospective employers from the private sector involving regular consultations about employers' skill needs, and joint university-industry research projects, as in China, may also be worthwhile considering.

Another solution is to improve the foundations of children's human capital before they reach adolescence as early investments in nutrition, health, and cognitive development have a positive impact on children's future outcomes. In countries as diverse as Jamaica, the Philippines, Turkey, and the United States, enriched childcare and preschool programs have led to higher achievement test scores, higher graduation rates from high school, and even lower crime rates for participants, which have been evident well into their 20s.[16]

[15] *World Bank (2003).*

[16] *Garces et al. (2000), Glewwe et al. (2001) and Kagitcibasi et al. (2001).*

Such reforms can be costly because of the high unit cost of educating students beyond the basic level. Teacher shortages in math and the sciences are acute, especially in Sub-Saharan Africa. It may be possible to make efficiency gains by improving the incentives for administrators and teachers, such as performance-based pay schemes now being tried in some Latin American countries.

Facilitating the School-to-Work Transition

For an economy to take advantage of enhanced human capital stocks, it is essential to deploy workers properly. Across all societies, it is not easy to start earning an independent livelihood, especially because the key to getting a job is having a track record – in work habits, job-related skills, and repaying loans – which of course is impossible for someone who is new to the labor force. Therefore, it is not surprising that youth unemployment rates are almost always significantly higher than adult unemployment rates – even in richer countries, where it is often double the adult rate. This differential varies widely in developing countries, but in some countries, youth unemployment can be three to six times higher than that of adults. So what is it that determines a country's success in deploying its young labor?

The first and best way to broaden the employment opportunities available to young people is to promote economy-wide growth that stimulates demand on the principle that a rising tide lifts young people's boats as well as everyone else's.[17] In many economies, an export orientation and foreign direct investment have expanded the demand for young workers. Along with sound basic education, these policies have been identified as central to the East Asian "miracle". In Indonesia, heavily export-oriented sectors such as electronics and textiles are youth-intensive sectors, in that their youth employment shares are more than twice the national average. So policies that open the economy to free trade tend to be youth-friendly. Looking through a youth lens simply reinforces the arguments in favor of pursuing these policies in the first place.

Looking through a youth lens may also mean that some general policies need to be changed once their implications for young people are taken into account, such as any labor market regulations that negatively affect new entrants disproportionately. Any policies that limit flexibility and mobility between sectors tend to make it harder for new entrants to find work and, thus, constrain young people more than others. The employment protection laws that prevail in Latin American and OECD countries tend to increase the youth unemployment rate. If minimum wages are set too high, they can discourage employers from employing the unskilled, who tend to be mostly young workers who are just beginning their working lives. This is not an argument for scrapping all such laws and regulations. Instead, it is a call to governments to develop policies that provide adequate employment protection without stifling

[17] *UNESCO (2004).*

opportunities for groups that are already at a disadvantage in the labor market.

If these jobs are the first rungs on the skill ladder, then young people have to be able to move freely to seize the opportunities that arise. Practical training that combines occupational and behavioral skills can make young people more mobile. But the track record of schools and even large public national training institutions in providing such skills has, at best, been mixed. Are there any other ways for young people to acquire these skills?

In developed countries, formal apprenticeships and internships have provided young people with a "structured work experience" in which they learn skills while on the job, and this experience is applicable to middle-income countries with a rapidly growing modern wage sector.

In poorer countries, such as in Burkina Faso, The Gambia, Nicaragua, Paraguay, Rwanda, and Sierra Leone, many young people are more likely to begin work in the informal sector than in the formal wage sector. In these countries, traditional apprenticeships in informal sector firms are more common, and incentives can be introduced to improve quality and foster innovations, as in Kenya's *Jua Kali* program. Another option for the young is self-employment. Some young people become entrepreneurs out of necessity, others by opportunity. Both types face constraints made more binding by their age, such as a lack of access to capital and to business networks. Programs to provide seed capital for young people to start a business and make contacts have started in Latin America.

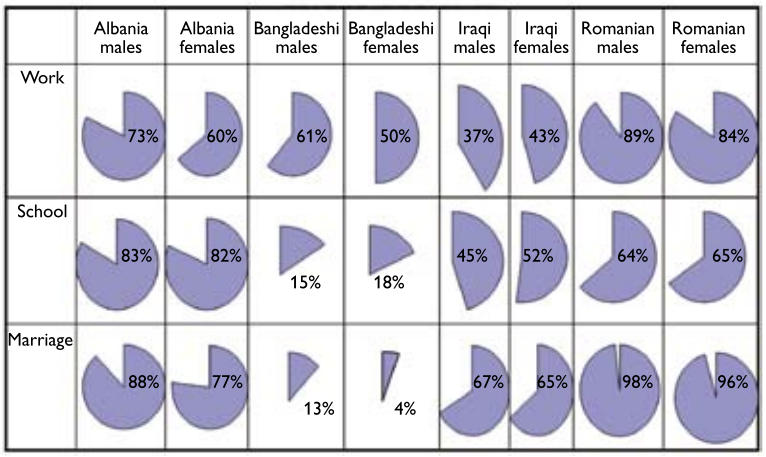
Enhancing the Capability of Young People to Make Good Choices

Because, after a certain age, young people decide how and whether to invest in their own human capital, the WDR 2007 claims that it is important for countries not only to expand opportunities but also to enhance the ability of young people to decide among them. Will they make the right decisions? And how can governments help them to make the right judgments?

When young people are adolescents, their parents and the elders in their families make the most important decisions for them. As they get older, young people themselves begin to be the primary decision-makers. The speed of the shift varies greatly for the different transitions. In some societies, the transition comes early. For many others, it comes only for some decisions and at an older age. And for some, such as young women in traditional societies where decision-making simply shifts from their parents to their husbands, independence never comes. These differences are well-illustrated in chart 3, which shows the responses to an international survey of 15 to 24 year olds, which asked young people in different settings who has had the most influence on decisions about their mar-

Chart 3

Who Has the Final Say? Young People's Influence on Their Own Key Transitions Vary Greatly across Societies



Source: World Bank (2006a).

Note: Intermedia Surveys: The percentage of young people who answered "Myself" (rather than parents, government or other) to the question: "Thinking of ... (each transition: the occupation you have or have had; your marriage partner, your years of schooling), who has had the most influence?"

riage, education, and occupation. Very few Bangladeshi young people thought that they themselves had the most influence on their schooling or marriage choices. In contrast, young Albanians and Romanians felt remarkably empowered to make these important decisions for themselves. Iraqis were mixed and, interestingly, Iraqi males felt that they had less control over their work and school decisions than Iraqi females.

How can countries' policies increase young people's ability to make good decisions about their human capital investments? Access to information combined with incentives, such as loans or credit and price subsidies or taxes, can help.

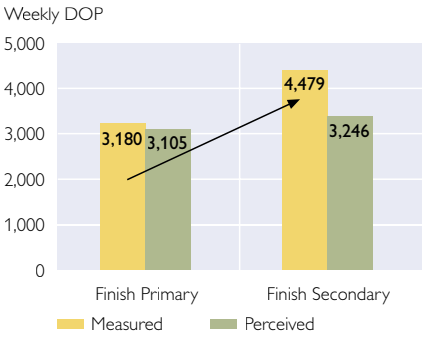
Providing Information

Many young people may be making important life-changing decisions without sufficient information. A 2001 survey of boys enrolled in the final year of primary school (Grade 8) in the Dominican Republic accurately estimated the returns to completing primary school consistently with estimated earnings profiles. This is shown in the left-hand bars of chart 4. However, when asked what the returns to completing four more years of education might be, these boys severely underestimated the returns to having a high school degree – by almost a factor of 10. Since this could affect whether or not these boys decided to go on to high school, the researchers chose students from randomly selected schools and gave them information on the estimated actual earnings profiles. Follow-up surveys in 2005 indicate that those who had been given that information were 12% more likely to be attending school in the following school year than those who were not given the information.[18]

[18] *Jensen (2006).*

Chart 4

Primary School Leavers
Underestimate the Returns to Completing Secondary Education in the Dominican Republic



Source: Dominican Survey (2001).

Note: Measured = Actual earnings based on worker surveys; Perceived = Earnings perceived by the 8th grade boys if they finish primary or secondary; Perceived returns < measured returns.

Is this a large return? An education project that raised secondary school enrollment rates from 52% to 56% would be considered a success, especially given the small costs involved in disseminating information. This "information project" built no schools, hired no teachers, and bought no textbooks.

The information gap can occur when youngsters observe trends from a very select sample. For example, the Dominican students may have based their estimates on observing the wages only of those young people who remained in the village after completing secondary school as any high earners would have already moved away. This reinforces the value of labor market information programs that target young people in remote areas.

Introducing Incentives

Sometimes information is not enough. Because young people are just beginning to be financially independent, they naturally face more restraints on their consumption and investment decisions. Choosing to invest in increasing their skills involves substantial costs. Out-of-pocket costs tend to vary; for the half of all university students in private universities in Argentina, Brazil, Chile, and Colombia, they range from 30% to 100% of GDP per capita.[19] Even for those in free public universities, the opportunity costs are substantial. Because of the big personal payoffs to higher education, such costs would not be a binding constraint if liquidity were not an issue. But it is. A recent study has found that Mexican households with the same permanent income are less likely to send their offspring to university if they have a bad year.[20]

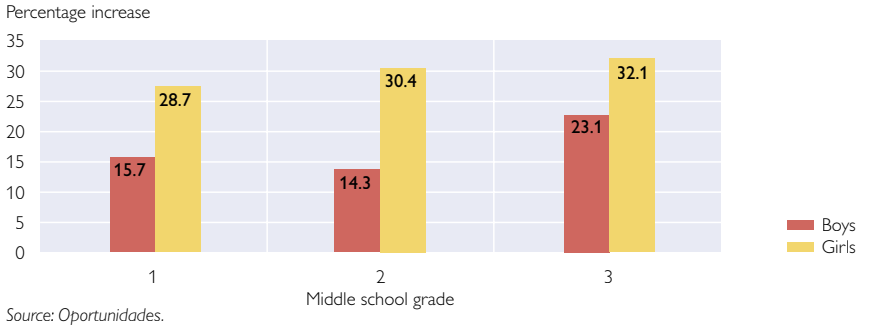
The obvious way to lift this constraint is to provide credit to students. Such credit schemes could not function effectively without government support, since commercial loans are not available to the poorest students because they have no collateral or parental guarantees to back them up. Moreover, the pressures on young people to start earning their livings are high enough even without having to pay back a debt that is many multiples higher than their initial earnings. And many public institutions have found it difficult to administer such schemes because of low repayment rates, especially given high youth

[19] *De Ferranti et al. (2003, p. 97).*

[20] *Jacoby and Skoufias (2002).*

Chart 5

Percentage Increase in Middle School Enrollment Due to Oportunidades in Mexican Rural Areas by Sex and Grade from 1997 to 2001



Source: Oportunidades.

unemployment rates. Australia has pioneered a system that makes repayment contingent on graduates' incomes, as tracked by the tax system. Middle-income countries such as Thailand are only now starting to try such credit schemes, which are worth monitoring and evaluating.[21]

The income constraint is binding in poorer countries, even for secondary education. Because parents are the main means of support for young people at this age, some existing subsidy schemes to encourage enrollment are targeted to the household, but the transfers are conditional on the achievement of youth-related outcomes. Mexico's *Oportunidades*, for example, provides such an incentive by giving larger transfers to households if young females (as opposed to males) stay in school. Chart 5 shows that, as a result of the program, girls' enrollment in all three years of middle school increased for much more than that of boys in rural areas. But some innovative programs have channeled subsidies directly to students, particularly young girls, partly as an inducement for them to perform well in school but also to ensure that they have control over their own decision to attend school despite age-old biases against girls' schooling in some countries. For example, the Bangladesh Secondary Stipend Program targets girls aged 11 to 14, transferring a monthly payment to bank accounts in the girls' names contingent on their performing well enough to pass in school and staying unmarried.

Another type of incentive would be to change the prices of commodities that carry risks for young people. This can be especially important in deterring young people from engaging in risky kinds of behavior, the consequences of which will not occur until much later. For example, when young people develop a dependence on alcohol or an addictive smoking habit, this may not result in liver or lung disease until these young people become adults. Recent research has shown that, in some countries, an increase so-called "sin taxes," like alcohol or cigarette taxes, can result in significant declines in risky behavior. These studies assume a price elasticity of –1.2 for low- and middle-income countries and –0.8 for high-income countries.

[21] *See box 6.3, chapter 6 of WDR 2007.*

Providing Second Chances

Although broadening the opportunities available to young people and and helping them to choose wisely among them are the priorities, many young people cannot take advantage of these opportunities because they were ill-prepared during their younger years. The worldwide median primary school completion rate is now approaching 85%, but many countries and regions still lag behind (for example, Sub-Saharan Africa is at 55%) either because children have dropped out or never went to school in the first place.[22] In countries ravaged by civil war (such as Sierra Leone), the proportion can amount to an entire school-age generation. This gap is very difficult to bridge given present educational structures. Even for those who complete primary schooling, many come from such poor backgrounds that they fail to continue schooling

These undesirable outcomes are partly a legacy of past policies and practices that failed to deliver the basic services so important for ensuring that young people become productive, responsible citizens. However, bad outcomes are also partly the result of the misjudgments of young people themselves because they are inexperienced in decision-making and are less averse to risk than adults. Even though adults and young people differ little in terms of their ability to carry out decisions, experimental results have shown that young people differ from adults in terms of how they assess the eventual consequences of their choices. This may be due to myopia or to a preference for immediate gratification. Alternatively, it may also be due to the young person's search for his or her own identity. This inability on the part of young people to accurately assess the consequences of their choices can have tremendous effects, especially when the payoffs of positive actions such as going to school or using contraception are not experienced till some time in the future.

Given the legacy of past policies and behavior and the many market failures, what can be done to give second chances to young people who are coping with the consequences of their bad decisions? Remediation tends to be relatively costly in the case of many of the five key transitions, which is why policymakers need to focus on the basic needs of younger children, as well as on broadening opportunities for young people and helping them to make wise decisions. Although it is difficult to get precise estimates, in comparing adult basic literacy programs with primary education programs in Bangladesh and Senegal, it seems that the remedial programs are one to three times more costly, even before taking opportunity costs into account.[23] So, the first lesson is to try to get it right the first time.

[22] *Bruns et al. (2003).*

[23] *Knowles and Behrman (2003, pp. 39–40). This study showed that a USD 1,000 investment in adult basic education and literacy could produce about 10.23 trainees. The authors compared the benefits of this as equivalent to one year of primary schooling (lower bound) or four years of primary schooling (upper bound). If one were to use the unit cost of education in Bangladesh (about USD 31 from EDSTATS), a similar investment would yield 32.3 primary school students. Thus, the bounds are roughly 0.8 to 3 times the cost, without opportunity costs.*

However, there will always be a need to go beyond prevention to try to mitigate the effects of undesirable but sadly inevitable youth outcomes. Some of the second-chance programs that already exist in developing countries include reinvesting in human capital (adult literacy programs) and reintegrating the long-term unemployed into the labor force (retraining programs for school dropouts and public works schemes for the young). To ensure the cost-effectiveness of these programs, it is vital to target these programs and make them attractive to young people and coordinate them with mainstream "first-chance" programs.

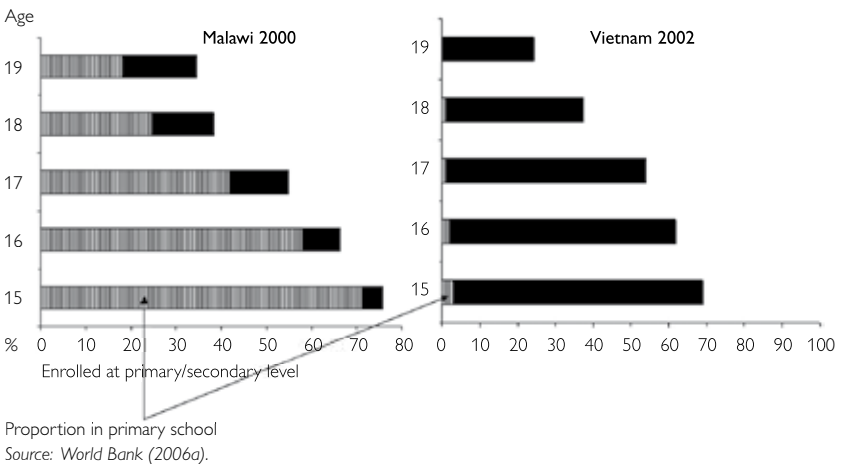
Targeting Young People

Primary schools are not only providing a sound primary education (six years) to children; they are also catering for many young adults who have repeated many grades many times and/or started school very late. Others are trying to get back into the educational system after many years away (in post-conflict countries, this may constitute an entire generation of school-age children).

Age-enrollment profiles for different educational levels show that, although some poorer countries such as Vietnam have managed to get their young people through primary levels more or less on time, others such as Malawi have not (chart 6). Malawi has an enrollment rate of almost 75% for its 15-year-olds compared with 70% for Vietnam, but almost all the Vietnamese kids will go on to the secondary level compared with only about 5% in Malawi. Malawi has a higher enrollment rate for 19 year olds than Vietnam, but half of them are still in primary school. What kinds of programs would be needed to make sure that they are educated to the same levels as those who are much younger? Vietnam has no such problem; all 19-year-olds who are in school in Vietnam are already at secondary school.

Chart 6

Large Numbers of Older Youth Are Still in Primary School in Some Countries



Source: World Bank (2006a).

Coordinating with the Mainstream

Most second-chance programs in developing countries are run as private initiatives by NGOs or agencies. The lesson from the few analyses of these programs that exist is that integrating and coordinating these programs with existing programs makes them more effective. To avoid the danger of developing very costly programs that duplicate each other, it is important to ensure reentry to mainstream programs. One example is graduate equivalency programs, which allow dropouts from secondary school to

take classes that will eventually get them the equivalent of a secondary diploma. Another is the U.S. community college system. Designed originally to provide second chances for adults, it is now being used increasingly by young high school graduates; three-quarters of all remedial students are in community colleges.[24]

By the same token, it is important for mainstream programs to be flexible enough so that early mistakes do not turn into permanent liabilities. Some countries track students as young as age 10 into schools that cater to different abilities, while other schools are comprehensive. A recent study of countries' educational achievements over time shows that early tracking not only increases education inequality (there is no catching up despite segregation) but may also lessen mean student performance.[25]

Summing Up

The WDR 2007's three-part framework for developing the human capital of the next generation – broadening their opportunities, enhancing their decision-making ability, and providing them with second chances – needs to be applied to each of the transitions. Spending more money on the basics, especially on improving quality, should be a top priority in countries where young people's outcomes in terms of life skills are still poor. In other countries, more attention needs to be given to upper secondary and tertiary education. However, beyond additional funding, it is equally important to ensure that young people, with the support of their families, are encouraged to invest in themselves. As with any investment, improving the climate for investing in human capital can raise the returns and lower the risks.

What can countries gain by such an investment strategy? The precise amounts will of course vary by country circumstances. But an illustration of the magnitude of the joint effect applying all 3 lenses can be seen by considering the returns to a hypothetical secondary education project using data from the Dominican Re-

[24] *Span Jr. (2000).*

[25] *Hanushek and Wößmann (2005).*

public, Indonesia, and Mexico. Take a project that builds enough schools to increase upper secondary enrollment to 57% from 52% of the relevant age cohort. Earnings and cost data for Mexico[26] indicate that such a project would have a benefit-to-cost ratio of 1.03 in present value terms, an acceptable return on an investment that broadens opportunities.

However, recent research shows that secondary students severely underestimate the real returns to completing secondary school.[27] A project that not only provided another secondary school place but also gave young people information that corrects their misperceptions of the returns to education would raise the enrollment rate to 62%. The benefit-to-cost ratio for this project would be 1.68, a much better investment.

Finally, a project that makes the investment less risky for young people would increase enrollment even more. The risk could be in the form of an economic shock that would make secondary education unaffordable, forcing them to drop out, which would be a waste of resources. If a student or her family had the insurance of a scholarship scheme in the event of an income shock, enrollments would rise to 69%. Such a program, combined with the first two, would have a benefit cost ratio of 2.15, which would be even better than the other two options.

[26] *Filmer et al. (2006).*

[27] *Jensen (2006).*

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Klaus Liebscher Award
Klaus-Liebscher-Preis

Klaus Liebscher Award for Scientific Work on European Monetary Union and Integration Issues by Young Economists from EU and EU Candidate Countries

On the occasion of the 65th birthday of Governor Klaus Liebscher and in recognition of his commitment to Austria's participation in European monetary union and to the cause of European integration, the Oesterreichische Nationalbank (OeNB), in 2004, established a "Klaus Liebscher Award." This award is the highest scientific distinction, the OeNB offers every year for two excellent papers on European Monetary Union and European integration issues written by young economists (up to 35 years) from EU Member States or EU candidate countries. The award is worth EUR 10,000 per paper. The papers are refereed by a panel of highly qualified reviewers.

The Klaus Liebscher Award is granted this year for the third time. The winners of the "Klaus Liebscher Award 2007" are *Harald Badinger* (Vienna University of Economics and Business Administration) and *Gert Peersmann* (University of Ghent, Belgium). The papers of the award winners are available as OeNB-Working Papers 135 and 136.

In the first paper, *Has the EU's Single Market Programme Fostered Competition? Testing for a Decrease in Markup Ratios in EU Industries*, Harald Badinger uses modern econometric methods to investigate the effectiveness of the EU's Single Market Programme to foster competition. Measuring the competitiveness of industries by the tightness of profit margins he finds that the Single Market Programme leads to increased competitiveness in aggregate manufacturing and in construction. Services on the other hand have not become more competitive. The author concludes that the Single Market Programme has not been effective for services in the EU.

In the second paper, *The Relative Importance of Symmetric and Asymmetric Shocks: The Case of United Kingdom and Euro Area*, Gert Peersmann investigates the effects of symmetric and asymmetric demand and supply shocks as well as monetary policy and exchange rate shocks on different currency areas. Quantifying these effects is important to assess whether two currency areas would benefit from a currency union. While symmetric shocks are conducive for a currency union, asymmetric shocks make such an arrangement less attractive. Using an econometric model he quantifies the effects of such shocks for the U.K. and the euro area on the one hand and for the U.K. and the U.S.A. on the other hand. The author finds that the U.K. does not yet form an optimal currency area with the euro area.

Wolfgang Duchatczek
Vice Governor
Oesterreichische Nationalbank

Introductory Remarks[1]

The subsequent papers will treat, first, the empirical link between human capital and economic growth in OECD countries, and second, the European (higher) education systems. The first paper by Professor de la Fuente will revisit econometric estimations of the impact of human capital on economic growth, i.e. on the growth of GDP per head. In spite of its seemingly obvious relationship, academic investigations into the link between human capital and growth have not been conclusive for a long time. Long policy statements on reforming education systems were thus built on rather shaky foundations and suffered as a result from reduced credibility. It is the merit of Professor de la Fuente to have shown that by correcting for the quality of the human capital data, there is a clear impact on growth and the impact has hitherto been underestimated. Their estimates of the elasticity of output with respect to the stock of human capital are above 0.5, almost 50% higher than previous estimates. From my experience as a central banker and an economic policy-maker, it is of particular importance to be able to act on sound evidence. Human capital seems to be a major foundation for economic growth, and thus it is particularly important to know more precisely how human capital and growth are linked.

Given the importance of boosting human capital to accelerate economic growth, how are the European education systems performing? The panel discussion will provide the opportunity to reflect on this issue from the perspective of economic policy makers, by addressing the questions whether Europe is on the right track in reforming its education systems – do we do enough to make sure we build as much human capital as possible?

The importance of broad levels of participation in higher education has been mentioned before. Several new academic papers emphasize the causal link between higher education and

growth. In countries at the technology frontier, it contributes to the development and widespread use of innovation and advanced technologies. It is no coincidence that all countries which have seen an acceleration of their total factor productivity growth since 1995 also feature high tertiary graduation ratios. They were better placed to reap the benefits of the new general purpose technology, the information and communication technologies. Unfortunately, only few European countries show high levels of tertiary education, such as the Scandinavian countries.

This problem has been recognized lately by European policy makers. Just

[1] *The author wishes to thank Jürgen Janger for his valuable comments on this contribution.*

like for research and development expenditure, there is now a spending goal for investment in tertiary education in the reformed Lisbon Agenda: Countries should spend 2% of their GDP on tertiary education. The European average is much closer to 1%, while the U.S.A. spends much more than 2%. I want to cite Mr. Jean-Philippe Cotis, OECD's chief economist who at his recent visit to Austria stated: "If Europe does not improve its tertiary education system, it will not survive". Higher education is not only important for growth, innovation and international competitiveness. It also matters particularly in times of rapid structural change, triggered by either rapid technological change or increasing competition from emerging countries. In the short- to medium-run, job losses may be the result. We know from empirical studies that people with tertiary qualifications manage to find another job in a different economic sector more quickly than people with low qualifications. This is due to the general skills which come with tertiary education and which enable people to adapt more quickly to the demands of new jobs.

Europe must thus embark on further reforms of its higher education systems, and I am looking forward to the subsequent contributions on this topic.

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Human Capital and Growth: Some Results for the OECD [1]

Abstract

This paper summarizes the results of a series of studies that construct new attainment series for a sample of OECD members and analyze the contribution of investment in human capital to productivity growth after correcting the bias generated by the existence of measurement error in the schooling data.

JEL Classification: O40, I20, O30, C19
Keywords: human capital, growth, measurement error

1 Introduction

One of the most distinctive features of the "new" theories of growth has been the broadening of the relevant concept of capital. While traditional neoclassical models focused almost exclusively on the accumulation of physical capital (equipment and structures), more recent contributions have attributed increasing importance to the accumulation of human capital and productive knowledge and to the interaction between these two factors.

The empirical evidence, however, has not always been consistent with the new theoretical models. In the case of human capital, in particular, some recent studies have produced discouraging results. Educational variables are often not significant or even enter with the "wrong" sign in growth regressions, particularly when these are estimated using differenced specifications or panel techniques. The accumulation of negative results in the literature has generated a growing skepticism about the role of schooling in the growth process and has even led some authors (see in particular Pritchett, 2001) to seriously consider the reasons why educational investment may not contribute to productivity growth.

An alternative hypothesis that has received considerable attention by researchers in the area is that such negative results could be due, at least in part, to the poor quality of the schooling data that have been used in empirical studies of the determinants of growth. This article summarizes the main results of a series of papers that provide evidence in support of this hypothesis (de la Fuente and Doménech, 2000, 2001a, 2001b, 2002 and 2006). The paper is organized as follows. Sections 2 and 3 briefly survey the theoretical and empirical literature on growth and human capital and review the main educational data sets that have been used in this literature. Section 4 presents a new schooling series for a sample of 21 OECD countries that makes use of previously unexploited information. Section 5 discusses a series of indicators of the quality or information content of the existing schooling data sets that have been constructed using an extension of the technique proposed by Krueger

[1] *This article summarizes the results of a series of papers written in collaboration with R. Doménech. These studies have been financed by the European Fund for Regional Development, the OECD, Fundación Caixa Galicia and the Spanish Ministry of Science and Technology (through grants SEC99-1189 and SEC2002-01612).*

and Lindhal (2001). Different specifications of an aggregate production function are then estimated with each of these schooling series. Finally, the results of the last two exercises are used to correct the bias induced by measurement error. With this correction, the contribution of investment in human capital to productivity growth is positive and quite sizable.

2 Human Capital and Growth: Theoretical Framework and Empirical Evidence

Theoretical models of human capital and growth are built around the hypothesis that knowledge and skills embodied in humans directly raise productivity and increase an economy's ability to develop and to adopt new technologies. In order to explore its implications and open the way for its empirical testing, this basic hypothesis is generally formalized in one of two (not mutually exclusive) ways. The simplest one involves introducing the stock of human capital (which will be denoted by H throughout this paper) as an additional input in an otherwise standard production function linking aggregate output to the stocks of productive inputs (generally employment and physical capital) and to an index of technical efficiency or total factor productivity (TFP). The second possibility is to include H in the model as a determinant of the rate of technological progress (that is, the rate of growth of TFP). This involves specifying a technical progress function that may include as additional arguments variables related to R&D investment and the gap between each country and the world technological frontier.

In what follows, I will refer to the first of these links between human capital and productivity as *level effects* (because the stock of human capital has a direct impact on the level of output) and to the second one as *rate effects* (because H affects the growth rate of output through TFP). Box 1 develops a simple model of growth with human capital that formalizes the preceding discussion and incorporates both effects.

Some recent theoretical models also suggest that the accumulation of human capital may give rise to important externalities that would justify corrective public interventions. The problem arises because some of the benefits of a more educated labor force will typically "leak out" and generate benefits that cannot be appropriated in the form of higher earnings by those who undertake the relevant investment, thereby driving a wedge between the private and social returns to education. Lucas (1988), for example, suggests that the average stock of human capital at the economy-wide level increases productivity at the firm level holding the firm's own stock of human capital constant. It is also commonly assumed that the rate effects of human capital on technical progress include a large externality component because it is difficult to appropriate privately the full economic value of new ideas. Azariadis and Drazen (1990), and implicitly Lucas (1988) as well, stress that younger cohorts are likely to benefit from the knowledge and skills accumulated by their elders, thus generating potentially important intergenerational externalities that operate both at home and in school. The literature also suggests that human capital can

Box 1

A Descriptive Model of Human Capital and Growth

This box develops a simple model of growth and human capital that has two components: an aggregate production function and a technical progress function. The production function will be assumed to be of the Cobb-Douglas type:

(1) $\gamma_{it} = A_{it} K_{it}^{\alpha k} H_{it}^{\alpha h} L_{it}^{\alpha l}$

where γ_{it} *denotes the aggregate output of country* i *at time* t, L_{it} *is the level of employment,* K_{it} *the stock of physical capital,* H_{it} *the average stock of human capital per worker, and* $\alpha\gamma_{it}$ *an index of technical efficiency or total factor productivity (TFP) which summarizes the current state of the technology and, possibly, omitted factors such as geographical location, climate, institutions and endowments of natural resources. The coefficients* α_i *(with* $i = k, h, l$*) measure the elasticity of output with respect to the stocks of the different factors. An increase of 1% in the stock of human capital per worker, for instance, would increase output by* α_h*%, holding constant the stocks of the other factors and the level of technical efficiency.*

Under the standard assumption that (1) displays constant returns to scale in capital, labor and total human capital, LH*, (i.e. that* $\alpha_k + \alpha_l = 1$*) we can define a per capita production function that will relate average productivity to average schooling and to the stock of capital per worker. Letting* $Q = Y/L$ *denote output per worker,* $Z = K/L$ *the stock of capital per worker, and dividing both sides of (1) by total employment,* L*, we have:*

(2) $Q = AZ^{\alpha k} H^{\alpha h}$

The technical progress function describes the determinants of the growth rate of total factor productivity. I will assume that country i's TFP level can be written in the form:

(3) $A_{it} = B_t X_{it}$

where B_t *denotes the world "technological frontier" (i.e. the maximum attainable level of efficiency in production given the current state of scientific and technological knowledge) and* $X_{it} = A_{it}/B_t$ *the "technological gap" between country* i *and the world frontier. It will be assumed that* B_t *grows at a constant and exogenous rate,* g*, and that the growth rate of* X_{it} *is given by*

(4) $\Delta x_{it} = \gamma_{io} - \lambda x_{it} + \gamma_{it} H_{it}$

where x_{it} *is the log of* X_{it} *and* γ_{io} *a country fixed effect that helps control for omitted variables such as R&D investment. Notice that this specification incorporates a technological diffusion or catch-up effect. If* $\lambda > 0$*, countries that are closer to the technological frontier will experience lower rates of TFP growth. As a result, relative TFP levels will tend to stabilize and their steady-state values will be partly determined by the level of schooling.*

generate more diffuse "civic" externalities, as an increase in the educational level of the population may help reduce crime rates or contribute to the development of more effective institutions.

2.1 Empirical Evidence

Empirical studies of the productivity effects of human capital (or more broadly, of the determinants of economic growth) have followed one of two alternative approaches. The first one involves the specification and estimation of an ad-hoc equation relating growth in total or per capita output to a set of variables that are thought to be relevant on the basis of informal theoretical considerations. The second approach is based on the estimation of a structural relation between the level of output or its growth rate and the relevant explanatory variables that is derived from an explicit theoretical model built around an aggregate production function and, possibly, a technical progress function of the type described in box 1.

This basic framework for the "structural" analysis of the determinants of growth can give rise to a large number of empirical specifications. The production function can be estimated directly with the relevant variables expressed in levels or in growth rates when reliable data are available for the stocks of all the relevant production inputs. Alternatively, its parameters can be recovered from other specifications *(convergence* and *steady state equations)* that are designed for estimation when only data on investment flows (rather than factor stocks) are available. These specifications can be derived from production functions by replacing factor stocks or their growth rates by convenient approximations constructed using observed investment rates.

A large number of empirical studies have analyzed the relationship between human capital and growth using the different specifications I have just outlined.[2] The results have been mixed: while earlier studies on the subject generally produced positive results, the conclusions of a second group of more recent studies have been rather discouraging, as many of these studies failed to detect a significant positive correlation between average schooling and the level of productivity.[3] The main difference between the two sets of studies has to do with the use of econometric techniques that implicitly assign different weights to the cross-section and time-series variation in the data. While the first group of studies relied on cross-section data (working with a single observation per country that describes average behavior over a period of several decades), studies in the second group have used several observations per country, taken over shorter periods, and have employed panel techniques or differenced specifications that basically eliminate the cross-section variation in the data before proceeding to the estimation.

Although the estimation techniques used in the more recent studies have the important advantage that they control for unobservable differences across countries, they also have some disadvantages. Perhaps the main one is that they are more sensitive to measurement error in the data as errors tend to be greater in the time-series than in the cross-section dimension because they tend to cancel out when we work with averages over long periods. This suggests, as I have already noted in the introduction, that a possible explanation of the negative results obtained in many recent studies has to do with the poor quality of the schooling data that have been used in the growth literature. As we will see in the next section, most of the international schooling databases contain large amounts of noise that can be traced back to various inconsistencies of the primary data used to construct them. The existence of this noise induces a downward bias in the estimation of the coefficients that measure the impact of human capital (that is, a tendency to underestimate their values) because it

[2] *Section 3 of the Appendix of de la Fuente and Ciccone (2002) contains a detailed survey of this literature.*

[3] *See in particular Landau (1983), Baumol et al. (1989), Barro (1991) and Mankiw, Romer and Weil (1992) within the first group of studies and Kyriacou (1991), Knight et al. (1993), Benhabib and Spiegel (1994), Pritchett (1999), Islam (1995) and Caselli et al. (1996) within the second.*

generates spurious variability in the stock of human capital that is not matched by proportional changes in the level of productivity.

3 International Schooling Data Bases: a Brief Survey and Some Problems

Most governments gather information on a number of educational indicators through population censuses, labor force surveys and specialized studies and surveys. Various international organizations collect these data and compile comparative statistics that provide easily accessible and (supposedly) homogeneous information for a large number of countries. The most comprehensive regular source of international educational statistics is UNESCO's *Statistical Yearbook*. This publication provides reasonably complete yearly time series on school enrollment rates by level of education for most countries in the world and contains some data on the educational attainment of the adult population, government expenditures on education, teacher/pupil ratios and other variables of interest.[4]

The UNESCO's enrollment series have been used in a large number of empirical studies of the link between education and productivity. In many cases this choice reflects the easy availability and broad coverage of these data rather than their theoretical suitability for the purpose of the study. Enrollment rates can probably be considered an acceptable, although imperfect, proxy for the flow of educational investment. On the other hand, this variable is not necessarily a good indicator of the existing stock of human capital since average educational attainment (which is often the more interesting variable from a theoretical point of view) responds to investment flows only gradually and with a very considerable lag.

In an attempt to remedy these shortcomings, a number of researchers have constructed data sets that attempt to measure directly the educational stock embodied in the population or labor force of large samples of countries during a period of several decades. These data sets have generally been constructed by combining the available data on attainment levels with the UNESCO enrollment figures to obtain series of average years of schooling and the educational composition of the population or labor force. The best known attempts in this line are the work of Kyriacou (1991), the different versions of the Barro and Lee data set (1993, 1996, 2000) and the series constructed by World Bank researchers (Lau, Jamison and Louat (1991), Lau, Bhalla and Louat (1991) and Nehru, Swanson and Dubey, 1995).

In de la Fuente and Doménech (2000 and 2002) we briefly review the methodology used in these studies and compare the different data sets with each other, focusing in particular on the OECD, where the quality of the available information

[4] *Other useful sources include the UN's Demographic Yearbook, which also reports educational attainment levels by age group and, in recent years, the OECD's Annual Report on education in its member countries (Education at a Glance), which contains a great deal of information about the inputs and outputs of the educational system.*

should in principle be better than in developing countries. The analysis of the different series reveals very significant discrepancies among them in terms of the relative positions of many countries and implausible estimates or time profiles for at least some of them. Although the various studies generally coincide when comparisons are made across broad regions (e.g. the OECD versus LDCs – least developd countries – in various geographical areas), the discrepancies are very important when we focus on the group of industrialized economies. Another cause for concern is that existing estimates often display extremely large changes in attainment levels over periods as short as five years (particularly at the secondary and tertiary levels).

To a large extent, these problems have their origin in the deficiencies of the underlying primary data. As Behraman and Rosenzweig (1994) have noted, there are good reasons to worry about the accuracy and consistency of UNESCO's data on both attainment levels and enrollment rates. Our analysis of the different schooling data sets confirms this diagnostic and suggests that many of the problems detected in these data can be traced back to shortcomings of the primary statistics, which do not seem to be consistent, across countries or over time, in their treatment of vocational and technical training and other courses of study, and reflect at times the number of people who have started a certain level of education and, at others, those who have completed it.

4 A New Schooling Series for a Sample of Industrial Countries

Concerns about poor data quality and its implications for empirical estimates of the growth effects of human capital have motivated some recent studies that attempt to improve the signal to noise ratio in the schooling series by exploiting additional sources of information and introducing various corrections. This section summarizes the results of one of these studies (de la Fuente and Doménech, 2001b)[5] that constructs new schooling series for a sample of 21 OECD countries.[6]

To construct these series we first collected all the information we could find on the distribution of the adult population by educational level in OECD countries. We used both international publications and national sources (census reports and surveys, statistical yearbooks and unpublished data supplied by national governments and by the OECD). Next, we tried to reconstruct a plausible time profile of attainment in each country, using all the available data and a bit of common sense. For those countries for which reasonably complete series are avail-

[5] *This study extends and updates the series constructed in de la Fuente and Doménech (2000) for the same sample. Among other improvements, the revised series incorporate unpublished information supplied by the OECD and the national statistical institutes of about a dozen member states in response to a petition for assistance that was channeled through the Statistics and Indicators Division of the OECD.*

[6] *A closely related paper, both in terms of its objectives and its methodology, is Cohen and Soto (2001). These authors construct a schooling data set for a much larger sample of countries using census and survey data from UNESCO, the OECD's in-house educational data base, and the websites of national statistical agencies, together with enrolment rates from UNESCO and other sources.*

Table 1

Availability of Primary Data

	Secondary attainment			University attainment		
	direct/total observation	first observation	last observation	direct/total observation	first observation	last observation
U.S.A.	24/24	1960	1995	24/24	1960	1995
Netherlands	12/24	1960	1995	12/24	1960	1995
Italy	**15/24**	**1961**	**1999**	**5/8**	**1960**	**1998**
Belgium	13/24	1961	1995	12/24	1960	1995
Spain	12/21	1960	1991	12/21	1960	1991
Greece	15/24	1961	1995	15/24	1961	1997
Portugal	12/21	1960	1991	8/21	1960	1991
France	12/21	1960	1989	12/21	1960	1990
Ireland	15/24	1961	1998	11/24	1961	1998
Sweden	9/24	1960	1995	9/24	1960	1995
Norway	15/24	1960	1998	9/24	1960	1998
Denmark	**9/24**	**1973**	**1994**	**12/24**	**1973**	**1994**
Finland	16/24	1960	1995	21/24	1970	1995
Japan	8/21	1960	1990	12/21	1960	1990
New Zealand	10/24	1965	1998	10/24	1965	1998
U.K.	6/21	1960	1993	10/21	1960	1991
Switzerland	15/24	1960	1995	15/24	1960	1995
Austria	11/24	1961	1995	7/24	1961	1995
Australia	11/24	1965	1997	11/24	1966	1997
West Germany	**11/24**	**1970**	**1995**	**17/24**	**1961**	**1995**
United Germany	6/6	1991	1995	6/6	1991	1995
Canada	15/24	1961	1996	21/24	1960	1996

Source: OECD, national sources.

able, we have relied primarily on national sources. For the rest, we start from the most plausible set of attainment estimates available around 1990 or 1995 (taken generally from OECD sources) and proceed backwards, trying to avoid unreasonable jumps in the series that can only reflect changes in classification criteria. In some cases, the construction of the series involved subjective judgments to choose among alternative census or survey estimates when several are available. At times, we have also reinterpreted some of the data from international compilations as referring to somewhat broader or narrower schooling categories than the reported one.[7] Missing data points lying between available census observations are filled in by simple linear interpolation. Missing observations prior to the first census observation are estimated, whenever possible, by backward extrapolations that make use of census information on attainment levels disaggregated by age group.

[7] *Clearly, the construction of our series involves a fair amount of guesswork. Our "methodology" looks decidedly less scientific than the apparently more systematic estimation procedures used by other authors starting from supposedly homogeneous data. However, even a cursory examination of the data shows that there is no such homogeneity. Hence, we have found it preferable to rely on judgment to try to piece together the available information in a coherent manner than to take for granted the accuracy of the primary data. The results do look more plausible than most existing series, at least in terms of their time profile and, as I will show below, perform rather well in terms of a statistical indicator of data quality.*

Data availability varies widely across countries. Table 1 shows the fraction of the reported data points that are correspond to "direct observations" (taken from census or survey reports) and the earliest and latest such observations available for secondary and higher attainment levels. The number of possible observations is typically either 21 or 24 for each level of schooling depending on whether the series ends in 1990 or 1995 (two sublevels and a total times seven or eight quinquennial observations). In the case of Italy, there seem to be no short higher education courses, so the number of possible observations at the university level drops to eight.

As can be seen in the table, for most of the countries in the sample we have enough primary information to reconstruct reasonable attainment series covering the whole sample period. The more problematic cases are higlighted using bold characters. In the case of Italy, the main problem is that much of the available information refers to the population over six years of age. For Denmark and Germany (at the secondary level), the earliest available direct observation refers to 1970 or later. In these two cases, we have projected attainment rates backward to 1960 using the attainment growth rates reported in OECD (1974), but we are unsure of the reliability of this extrapolation.

After estimating the breakdown of the adult population by educational level, we have calculated the average number of years of schooling taking into account the theoretical duration of the different school cycles in each country. The results are summarized in table 2. The last row of the table

Table 2

Average Years of Schooling of the Adult Population

Sample average = 100 in each year

	1960	1965	1970	1975	1980	1985	1990
West Germany	118.5	120.1	121.6	121.7	121.7	122.1	121.7
Australia	117.7	120.6	122.6	124.0	125.7	124.2	121.1
Canada	124.1	123.5	123.2	123.1	122.9	121.2	119.7
U.S.A.	126.3	126.1	125.4	124.5	123.1	121.0	119.1
Switzerland	124.8	124.2	123.6	120.5	117.8	116.1	114.9
New Zealand	125.1	123.4	121.7	119.6	117.5	115.4	113.8
Denmark	129.0	125.9	123.0	119.8	116.9	113.7	110.2
Austria	**107.7**	**105.4**	**103.5**	**103.2**	**104.1**	**105.9**	**106.3**
Japan	103.1	103.3	103.5	104.8	105.6	105.5	105.6
Norway	115.8	113.6	111.6	108.9	107.1	106.1	104.4
Finland	91.5	94.5	96.8	98.6	100.7	102.0	103.1
Netherlands	97.0	97.6	98.1	99.0	100.1	101.4	102.9
Sweden	96.2	95.5	95.0	96.1	97.2	98.4	99.8
U.K.	102.5	101.7	100.8	99.9	99.0	98.8	98.9
France	97.3	98.6	100.2	101.3	99.9	98.9	98.2
Belgium	92.5	93.3	94.1	94.4	94.8	94.7	94.7
Ireland	88.0	86.8	86.9	86.5	86.0	87.0	88.4
Italy	64.7	66.7	68.6	69.6	70.7	73.1	75.6
Greece	66.5	67.5	68.5	70.1	71.8	73.1	74.3
Spain	59.5	58.5	57.5	58.5	59.5	62.8	66.7
Portugal	52.3	53.2	54.0	56.0	58.0	59.0	60.2
Average (in years)	8.36	8.69	9.02	9.45	9.87	10.28	10.64

Source: Author's calculations.

shows the (unweighted) average years of schooling for the entire sample. This variable increases by 27.3% between 1960 and 1990 as a result of the important improvement in the educational level of the younger cohorts observed in practically all countries. The rest of the rows show the position of the different countries relative to the sample average in each period, which is normalized to 100, with the countries arranged in decreasing order by school attainment in 1990.

5 Attenuation Bias and a Quality Indicator for the Most Commonly Used Schooling Series

Measurement error generates a tendency to underestimate the impact of human capital on productivity. Box 2 discusses the origin of this *attenuation bias* and describes a technique that can be used to construct an indicator of the quality of different series that measure with error a common underlying variable. Intuitively, the bias arises because measurement error introduces "noise" that tends to hide the relationship between the variables of interest. The quality indicator, known as the *reliability ratio*, measures the importance of such noise relative to the true signal contained in each of the series and is constructed on the basis of an analysis of the capacity of each series to explain the behaviour of the rest. This ratio is very useful, first because it provides an indicator of the informational content of each series, and second because the error in the estimation will be inversely proportional to its value. As a result, the reliability ratio can be used to correct the attenuation bias so as to obtain consistent estimators of the parameter of interest (i.e. estimators that are not biased in large samples).

In de la Fuente and Doménech (2002 and 2006) we use the procedure described in box 2 to construct an indicator of the information content of the series of years of schooling most commonly used in the growth literature, restricting ourselves to the sample of 21 OECD countries covered by the data set described in the previous section. This indicator is constructed for several transformations of the series of average years of schooling after removing period means from all the series so as to eliminate fixed time effects. In particular, we estimate reliability ratios for years of schooling measured in levels (S_{it}) and in logs (s_{it}), for average annual changes in both levels and logs measured across successive quinquennial observations (ΔS_{it} and Δs_{it}), and for log years of schooling measured in deviations from their country means ($s_{it} - s_i$). Notice that Δs_{it} corresponds to annual growth rates and $s_{it} - s_i$ is the "within" transformation often used to remove fixed effects.

The results are shown in table 3 with the different data sets arranged by decreasing average reliability ratios. The last row of the table shows the average value of the reliability ratio for each type of data transformation (taken across data sets), and the last column displays the average reliability ratio of each data set (taken across transformations). Our mean estimate of the reliability ratio for all the series and transformations is 0.335. Since this variable must lie between zero and one (with zero indicating that the series contains only noise and one that it is measured

Box 2

Attenuation Bias and the Reliability Ratio

The origin of the attenuation bias is the following one. Assume that the level of productivity, Q, is a linear function of the stock of human capital, H, given by

(1) $Q = bH + u$

where u is a random disturbance. Given this relationship, variations in the stock of human capital, H, will induce changes in Q, and the relative magnitude of the variations in these two variables will allow us to estimate the value of the coefficient b. Now, if H is measured with error, that is, if what we observe is not H itself but a noisy proxy for it, $P = H + \varepsilon$, where ε is a random measurement error, then part of the apparent variation in the stock of human capital (over time and across countries) will be due to measurement error − that is, it will be noise rather than true signal. Since such variations logically do not induce any response in Q, this variable will appear to be less sensible to H than it really is, thereby biasing toward zero the estimated value of b.

The size of the bias will be inversely related to the information content of the series, as measured by its reliability ratio, r. This variable is defined as the ratio between the signal and the sum of signal and noise contained in the data, that is,

$$(2)\ r \equiv \frac{var\ H}{var\ P} = \frac{var\ H}{var\ H + var\ \varepsilon}$$

where $var\ H$ measures the signal contained in the series and var ε the noise that distorts it.[1]

When several noisy proxies are available for a given variable, their respective reliability ratios can be estimated using a procedure proposed by Krueger and Lindhal (2001). Let $P_1 = H + \varepsilon_1$ and $P_2 = H + \varepsilon_2$ be two alternative proxies for the stock of human capital, H. It is easy to check that if the error terms of the two series, ε_1 and ε_2, are not correlated with each other, then the covariance between P_1 and P_2 can be used to estimate the variance of H, which is the only unknown magnitude in equation (2). It follows that, under this assumption, r_1 can be estimated as

$$(3)\ \hat{r}_1 = \frac{cov\ (P_1, P_2)}{var\ P_1}$$

which turns out to be the formula for the OLS estimator of the slope coefficient of a regression of P_2 on P_1. Hence, to estimate the reliability of P_1 we run a regression of the form $P_2 = c + r_1 P_1$.[2] *Notice, however, that if the measurement errors of the two series are positively correlated ($E\varepsilon_1 \varepsilon_2 > 0$) as may be expected in many cases, $\hat{r}_1$ will overestimate the reliability ratio and hence understate the extent of the attenuation bias induced by measurement error.*

In de la Fuente and Doménech (2002) we develop an extension of this procedure that can be used to construct a minimum-variance estimator of the reliability ratio whenever more than two noisy proxies are available for the same underlying variable, under the maintained assumption that measurement errors are uncorrelated across data sets. As in Krueger and Lindahl, the reliability ratio r_k of a given series of average years of schooling (say S_k) is estimated by using S_k to try to explain alternative estimates of the same variable (S_j with $j \neq k$). The main difference is that, rather than running a set of independent pairwise regressions with different data sets, the efficient estimator of the reliability ratio for data set j can be obtained as the slope coefficient of a restricted SUR model of the form

$$(4)\ P_k = c_k + r_j P_j + u_k \quad \text{for} \quad k = 1..., K$$

[1] *Notice that the denominator of the last expression given in (2) implicitly assumes that the measurement error term, ε, is not correlated with H.*

[2] *Intuitively, regressing P_2 on P_1 gives us an idea of how well P_1 explains the true variable H because measurement error in the dependent variable (P_2 in this case) will be absorved by the disturbance without generating any biases. Hence, it is almost as if we were regressing the true variable on P_1 .*

where k denotes the "reference" data set and varies over the last available version of all data sets different from j. The reliability ratio of Barro and Lee's (2000) data set, for instance, is estimated by using these authors' estimate of average years of schooling as the explanatory variable in a set of regressions where the reference (dependent) variables are the average years of schooling estimated by Kyriacou (1991), Nehru et al. (1995), Cohen and Soto (2001) and ourselves. Other versions of the Barro and Lee data set, however, are not used as a reference because the correlation of measurement errors across the same family of schooling series is almost certainly very high and this will artificially inflate the estimated reliability ratio.

Table 3

SUR Estimates of Reliability Ratios, OECD Sample

Sample average = 100 in each year

	S_{it}	s_{it}	ΔS_{it}	Δs_{it}	s_{it}-s_i	Δs_{it}-Δs_i	Average
D&D (2002)	0.754	0.775	0.337	0.769	0.917	0.246	0.633
C&S (2001)	0.806	0.912	0.330	0.467	0.547	0.185	0.541
D&D (2000)	0.720	0.761	0.100	0.550	0.818	0.074	0.504
Kyr. (1991)	0.723	0.600	0.024	0.065	0.111	0.026	0.258
B&L (2000)	0.707	0.603	−0.018	0.045	0.178	−0.016	0.250
B&L (1996)	0.559	0.516	−0.017	0.039	0.146	−0.007	0.206
B&L (1993)	0.526	0.436	−0.019	0.029	0.121	−0.017	0.179
NSD (1995)	0.278	0.330	−0.021	0.066	0.095	−0.115	0.106
Average	0.634	0.617	0.090	0.254	0.367	0.047	0.335

Notes: All series are measured in deviations from their respective sample means in each period prior to estimation.
Key: D&D = de la Fuente and Doménech; C&S = Cohen and Soto; Kyr = Kyriacou; B&L = Barro and Lee; NSD = Nehru, Swanson and Dubey.

without error)[8] this result suggests that the average estimate of the coefficient of schooling in a growth equation is likely to suffer from a substantial downward bias, even without taking into account the further loss of signal that arises when additional regressors are included in these equations (see de la Fuente and Doménech, 2006). The bias will be smaller when the data are used in levels or logs, but is likely to be very large in fixed effects or differenced specifications. The average reliability ratio is only 0.254 for the data in quinquennial log differences, and 0.090 for level differences taken at the same frequency.

Our results indicate that the importance of measurement error varies significantly across data sets, although their precise ranking depends on the data transformation that is chosen. Two of the datasets most widely used in cross-country empirical work, those by Kyriacou (1991) and Barro and Lee (various years), perform relatively well when the data are used in levels but, as Krueger and Lindhal (2001) note, contain very little signal when the data are differenced. Recent efforts to increase the signal content of the schooling data seem to have been at least partially successful, although the attenuation bias continues to be potentially large

[8] *This is true as long as the measurement error terms of the different series are uncorrelated with each other and with H. As can be seen in table 3, some of our estimates of the reliability ratio lie outside this interval, which implies some violation of this assumption. In de la Fuente and Doménech (2002) we construct alternative estimates of reliability ratios under more general assumptions and find that the required corrections do not qualitatively change the results.*

even in these cases. Taking as a reference the average reliability ratio for the (1996) version of the Barro and Lee data set (0.206), the latest revision of these series by the same authors has increased their information content by 21%, while the estimates reported in Cohen and Soto (2001) and in de la Fuente and Doménech (2001) raise the estimated reliability ratio by 162% and 207% respectively.

6 Data Quality and Estimates of the Growth Effects of Human Capital

As we have seen in the previous section, the expected value of the attenuation bias is a decreasing function of the reliability ratio of the series used in the estimation. This suggests that the estimated value of the coefficient of human capital in a growth regression should increase with the quality of the schooling data. In de la Fuente and Doménech (2006) we show that this is indeed the case. We estimate various specifications of an aggregate production function using the different schooling series analyzed in the previous section as alternative proxies for the stock of human capital. We find that both the size and the significance of the coefficient of schooling increase as expected with the reliability ratio. Finally, we exploit this correlation to construct a set of "meta-estimates" of the parameter of interest that correct for measurement error bias.[9]

6.1 Results with Different Schooling Series

The equations we estimate are derived from a Cobb-Douglas aggregate production function with constant returns to scale that includes as inputs the stock of physical capital, the level of employment and the average level of education of the adult population. This equation is estimated in levels (with the variables measured in logarithms), in levels with fixed country effects and in first differences. We also estimate a fourth specification in differences that includes fixed country effects and incorporates a process of technological diffusion or catch-up. In this specification, the rate of growth of TFP is directly proportional to the technological distance between each country and the U.S.A., and the fixed country effects capture permanent differences in TFP levels that will presumably reflect differences in R&D expenditure and other omitted variables.[10]

These specifications are estimated using quinquennial data for our usual OECD sample that cover the period 1960–1990. All equations include fixed period effects (dummy variables for the different sample subperiods). The estimates of the coefficient that measures the elasticity of output with respect to the level of schooling (α_s)

[9] *A meta-estimate is an estimate that is not obtained directly from the data but is constructed using other primary estimates.*

[10] *All specifications are derived from equation (2) in box 1 using average years of schooling (S) as a proxy for the stock of human capital (H). The last specification also incorporates a technical progress function similar to equation (5) in the same box, except in that the stock of human capital is omitted. Hence, the estimated model does not allow for rate effects. We have tried to incorporate them but the results are not satisfactory. This problem arises frequently in the literature. See de la Fuente and Ciccone (2002) for a discussion of the reasons why it may be difficult to separate the rate and level effects of human capital.*

Table 4

Alternative Estimates of the Human Capital Coefficient (α_s) – Using Different Specifications and Schooling Series

	NSD	KYR	B&L (1993)	B&L (1996)	B&L (2000)	C&S	D&D (2000)	D&D (2002)	Average
Levels	0.078	0.186	0.141	0.165	0.238	0.397	0.407	0.378	0.249
	(2.02)	(2.18)	(4.49)	(4.82)	(6.19)	(7.98)	(7.76)	(6.92)	(5.30)
Fixed effects	0.068	0.066	0.136	0.115	0.203	0.608	0.627	0.958	0.348
	(0.76)	(1.86)	(3.30)	(1.80)	(3.74)	(4.49)	(3.99)	(6.51)	(3.31)
Differences	0.079	0.009	0.089	0.083	0.079	0.525	0.520	0.744	0.266
	(0.70)	(0.15)	(2.52)	(1.47)	(1.28)	(2.57)	(2.17)	(3.10)	(1.75)
Catch-up	− 0.206	0.014	0.056	−0.007	−0.019	0.573	0.587	0.540	0.192
	(1.61)	(0.29)	(1.80)	(0.11)	(0.31)	(3.52)	(3.47)	(2.89)	(1.24)
Average	0.005	0.069	0.106	0.089	0.125	0.526	0.535	0.655	
	(0.47)	(1.12)	(3.03)	(2.00)	(2.73)	(4.64)	(4.35)	(4.86)	

Key: See table 3.

obtained with the different specifications and schooling series are shown in Table 4. The last two rows of the table show average coefficient values and *t* ratios for each data set computed across the different specifications, and the last column reports the average values of α_s and the corresponding *t* statistic computed across data sets for each specification.

The pattern of results that emerges as we change the source of the human capital data is consistent with our hypothesis about the importance of educational data quality for growth estimates. For all the data sets, the estimated value of α_s is positive and significant in the specification in levels without fixed country effects (first set of rows in the table), but the size and significance of the estimates increases appreciably as we move to the data sets with higher reliability ratios (that correspond to the last columns of the table). The differences are even sharper when the estimation is repeated with fixed country effects (second set of rows) or with the data in growth rates with or without a catch-up effect (third and fourth blocks). The results obtained with the Kyriacou, Barro and Lee and Nehru et al. data in growth rates are consistent with those reported by Kyriacou (1991), Benhabib and Spiegel (1994) and Pritchett (1999), who find insignificant (and sometimes negative) coefficients for human capital in an aggregate production function estimated with differenced data. On the other hand, our series and those of Cohen and Soto produce rather large and precise estimates of the human capital coefficient in most equations and, in the case of our preferred catch-up specification, yield plausible values of the remaining parameters of the model as well, with estimates of α_k close to the share of physical capital in national income and positive diffusion coefficients.

6.2 Correcting for Measurement Error Bias

The results summarized in table 4 strongly suggest that measurement error induces a large downward bias in human capital coefficients. They also show that improvements in data quality reduce this bias and generate results that are generally more favourable to the view that investment in schooling contributes substantially to productivity growth. To make this

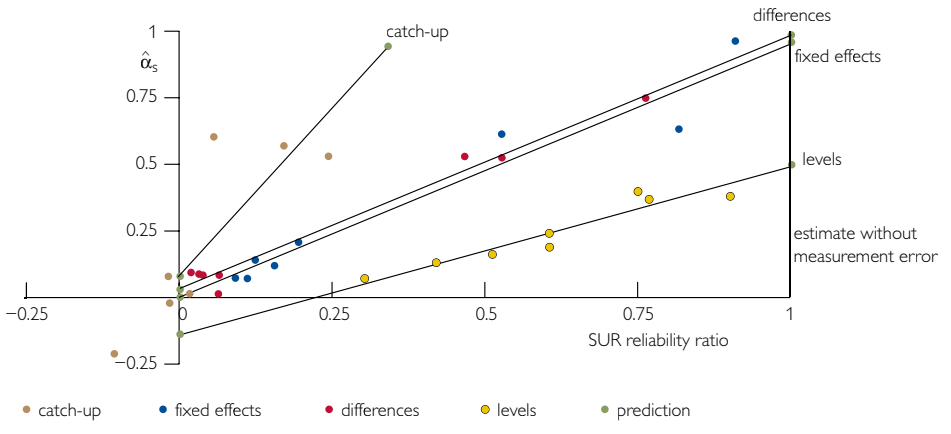
point visually, the chart plots the various estimates of α_s given in table 4 against the corresponding SUR reliability ratios (taken from table 3), along with the regression lines that summarize the relationship between these two variables for each of the specifications estimated in the previous section. The scatter shows a clear positive correlation between OLS estimates and reliability ratios within each specification and suggests that the true value of α_s is at least 0.50 (which is the prediction of the levels equation for $r=1$).

A the chart suggests, it is possible to extrapolate the relationship between the reliability ratio and the estimated human capital coefficient that is observed across data sets to estimate the value of α_s that would be obtained in the absence of measurement error. In this manner, it is possible to construct meta-estimates of this parameter that will be free of attenuation bias, although this has to be done a bit more carefully than the chart suggests when the growth equation includes additional regressors. In de la Fuente and Doménech (2002) we use a procedure of this type to obtain consistent meta-estimates of α_s. Working with the three linear specifications estimated above (that is, with all of them except for the catch-up model) and with different assumptions about the nature of measurement error (and in particular about its correlation across data sets and with the remaining explanatory variables in the model), we obtain nine different estimates of α_s that range from 0.587 to 2.606 with an average value of 1.11.

These values are significantly higher than those obtained in the previous literature. The smallest of them is roughly twice as large as Mankiw, Romer and Weil's (1992) estimate of 1/3, which could probably have been considered a consensus value for this parameter in the early 1990s and came then to be seen as too optimistic in the light of negative results in the literature. Our estimates, by contrast, point to a considerably higher

Chart 1

Estimated α_s vs. SUR Reliability Ratio



Source: Author's calculations.

figure and suggest that investment in human capital is an important growth factor whose effects have been underestimated in previous studies as a result of the poor quality of schooling data.

7 Conclusion

Existing data on educational attainment contain a considerable amount of noise that reflects various deficiencies of the primary data. In an attempt to increase the signal-to-noise ratio in these data, we have constructed new schooling series for a sample of OECD countries using previously unexploited information and an ad-hoc procedure that attempts to minimize the error generated by changes in classification criteria. We have also constructed a statistical measure of the information content of the schooling data sets used in the growth literature. This indicator supports our view that the amount of measurement error in these data is rather large, and suggests that both our attainment series and those constructed by Cohen and Soto (2001) constitute a significant improvement over earlier sources.

The studies summarized in this paper were originally motivated by the view that weak data is likely to be one of the main reasons for the discouraging results obtained in the empirical literature on human capital and growth. Our results clearly support this hypothesis, as does recent work by Krueger and Lindhal (2001) and Cohen and Soto (2001), and suggest that the contribution of investment in education to productivity growth is sizable. Unlike several older data sets, our revised series produce positive and theoretically plausible results using a variety of growth specifications. More importantly, our analysis of the performance of different schooling data sets in a variety of production function specifications shows a clear tendency for human capital coefficients to rise and become more precise as the information content of the schooling data increases. We have extrapolated this relationship to construct estimates of the value of the coefficient that would be obtained with the correctly measured stock of human capital. The exercise suggests that the true value of the elasticity of output with respect to the stock of human capital is almost certainly above 0.50, that is, at least 50% higher than the most optimistic estimate of reference in the previous literature.

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Mario Cervantes
Leslie Lipschitz
Susanne Lohmann
Rick van der Ploeg
Georg Winckler

Podiumsdiskussion:
Know-How und Ausbildung –
Ist Europa auf dem richtigen Weg?

Panel Discussion:
Skills and Education –
Is Europe on the Right Way?

Mario Cervantes
Senior Economist
Organisation for Economic Co-operation and Development

The Skills Challenge for Europe – the Unfinished Agenda

Introduction

Good afternoon ladies and gentlemen, distinguished guests and speakers. I am very honoured to participate at this conference in Vienna and as such I should like to thank the Oesterreichische Nationalbank and the organisers. You are all probably very familiar with the work of the OECD, not least its annual economic reports and forecasts, but also its PISA (Programme for International Student Assessment) study, the country reviews of tertiary education as well as its work on science, technology and innovation policies.

As most organisations, the OECD has its share of departments and divisions with fancy acronyms and abbreviations. I work in the Science and Technology Policy Division, or rather the DSTI. Our focus is on science, technology and innovation analysis and policies. In this context, we work together with the Education Directorate (which houses PISA) and the Economics Directorate on issues related to research, innovation and human resources in science and technology.

The reason I am describing the internal organisation and workings of the OECD is that it is also very relevant for governments insofar as the development of human capital – our topic today – cuts across ministerial, judicial and departmental boundaries. And therefore analysis and policy making in this area needs to be better linked up to become more coherent, mutually reinforcing and therefore more effective.

Now what I have been asked to do today is to be a discussant, hence I have dispensed with the usual battery of OECD slides that few of you in the audience could read except those sitting in the front. Firstly, I should like to recall why human capital matters and where Europe stands today. Secondly, I will outline the challenges for Europe as seen from the Science and Technology (S&T) side of the OECD and thirdly I will discuss the policy responses that have been adopted that could provide lessons for others.

Why the Focus on Human Capital?

The OECD's 2005 *Going for Growth Study*. Over the past ten years only around half of OECD countries have made good progress towards converging on the living standards of the benchmark United States. The study found that growth of labour productivity accounts for at least half of GDP per-capita growth in OECD countries (if not more). Another driver of growth has been improvements in the quality of labour e.g. increased labour quality due to education. In the U.S.A., improvement in labour quality contributed to 0.17 percentage points to U.S. labour productivity growth in the 1990s.

The gap in per capita GDP that several EU Member States have relative to the U.S.A. is mainly accounted by low labour utilization – that is, less people working productively relative to the U.S. benchmark.

In other OECD countries the gap is more due to difference in labour productivity – lower output per hour worked accounts for most of the GDP per capita gap in Switzerland, Iceland, Japan and Australia to name a few. In

some Nordic countries (Denmark, Finland, Sweden) the gap is due equally to lower labour productivity and lower labour utilisation (reflecting low average hours worked per worker). As well, Information and Communication Technologies (ICT) and Research and Development (R&D) have contributed to multifactor productivity growth. Furthermore, skilled migration is another factor that contributes to increasing to the quality of human capital stock.

As you all know, policies in several areas can contribute to address

weakness in labour productivity or in labour utilisation. Competition and product market regulation can help boost labour productivity. Another area is of course human capital development, the subject of our conference today. Other areas also matter such as labour market policies, innovation policies, tax policies etc. But let us keep to human capital.

Human capital is developed through several channels, most importantly, formal educational training that allows individuals to continue to learn and to accumulate and diffuse knowledge through tacit or codified means throughout their active lives.

How is Europe performing? The answer is well, relatively, but it can do better. A few dynamic countries are doing rather well, but some of the larger economies are stagnating or even falling behind. Among the EU Member States with the largest expansion in tertiary education are: Austria, Belgium, Denmark, Finland, Iceland, Ireland, Spain, and Sweden. Outside the EU, the U.S.A., Canada, Japan and Switzerland have seen increases of more than 5 percentage points in the share of 25–64 year olds with tertiary qualifications since 1995. In contrast, major economies such as France, Italy and the United Kingdom have just held their own and Germany actually has fallen behind.

In East Asia, progress has been more striking. Korea ranks number 3 (after the U.S.A. and Canada) among the 30 OECD countries whose youth in the age range of 25–34 has the highest share of graduates with university degrees. Furthermore, Korea ranks first in the OECD with the ratio of 25–34 year olds who have competed upper secondary education at 97%! The experience of Korea shows that rising population and increased demand can coincide to generate higher levels of educational attainment.

But demand for education is not increasingly across, the board, some skills are more in demand than others. Science and technology skills carry a premium: employment of human resources for science and technology (HRST) grew twice as fast as overall employment in the last decade.). The number of researchers in OECD countries, a subset of HRST, grew from 5.8 researchers per 1,000 employees in 1995 to 6.9 per 1,000 in 2002. Demand for researchers is greater in Japan (10.4 researchers per 1,000 labour force) and the

United States (9.6 per 1,000) than in the EU-25 (5.8 per 1,000). Japan and Korea aiming at boosting researchers and graduate enrolments. The EU objective of increasing R&D to 3% of GDP would require another half million researchers. Although we can debate such forecasts, it is clear that technological change is increasing demand for S&T skills.

What Does the Future Hold?

The PISA 2003 study showed that 20% of the 15-year-olds in the EU performed at baseline or lower level in the PISA math assessment. Overall 15 year olds in large EU Member States and the U.S.A. only performed around or below the OECD average. In contrast, six East Asian economies that took part in PISA were among the top 10 performers. There has also been some evidence of a decline in upper secondary and in university enrolments in S&T in countries such as Denmark and Germany. Whether these declines are temporary or a sign of a longer term trend remains to be seen. But policy makers would be unwise to not take action.

What are the Skill Challenges for Europe?

– *Quality of Education / Research Infrastructure*. Europe must act to reduce the number of school leavers without qualifications, especially those from lower socio-economic backgrounds are at greater risk of dropping out. It must also address renewal of research infrastructure at laboratories. Part of the solution will come from tackling the issue of financing. The EU spends less on education per student at all levels, primary, secondary and tertiary. But we all know that more money does not necessarily mean better quality, it is however, an issue of concern especially at tertiary level where the U.S.A. spends about close to USD 20,000 while the EU spends less than USD 10,000. Yet there are very high private returns to tertiary education, for questions of equity and sustainability, public funding must work together with private funding to ensure that European universities can adapt to global challenges.

– Another challenge with regard to participation is *helping integrate immigrant populations* and ensuring education systems can respond to diverse student populations. This is a societal challenge when one considers that unemployment rates among immigrants in many countries are two to three times higher than those among nationals. More than a third of second-generation immigrant children in Austria, Belgium, Denmark, Germany, Norway and the United States, who have spent their entire schooling in the host country, perform below the baseline PISA benchmark for mathematics performance at which students begin to demonstrate the kind of skills that enable them to actively use mathematics. In all other OECD countries except Australia and Canada, at least 20% of second-generation immigrant children fall below this level.

Additional Skill Challenges Include:

- Ph.D. training and reform
- Improving links between education and the labour market, including at vocational level
- Mobility in education (e.g. recruitment systems, Ph.D. postdoc training) is as important as labour mobility
- Lifelong-learning and ageing populations. How to improve equity in life-long learning? OECD studies show those that benefit the most from lifelong learning are the better educated. How can access to lifelong learning be broadened?

Globalisation Challenges for Education

- Non-OECD countries such as China, Brazil, India, Russia and Thailand are becoming major producers of the world's supply of science and engineering (S&E) graduates
- Globalisation of R&D creates conditions for outsourcing of high-skilled jobs, including R&D employment
- Globalisation of higher education providers
- Growing competition for foreign talent – more players than before

Policy Responses

A main trend in OECD and other countries has been to address these challenges by helping improve the governance of higher education institutions. Key words here are autonomy and accountability. Some countries have also experimented with tuition and with performance-based research funding but these experiments need to be broadened across Europe.

- Supply-side measures:
  - Raising quality of teaching (U.K., U.S.A., Ireland)
  - Addressing declining interest in science among youth (U.K., France, Germany, Netherlands, Korea)
  - Increasing interest in scientific studies among students
  - Strengthening science teacher training (Sweden, Norway, U.S.A., U.K.)
  - Measures to reduce gender gap in schools and universities as a way to boost supply
- Demand-side measures:
  - Making researcher employment more flexible (e.g. reforms in Germany and the U.K.)
  - Scaling up Major Research Infrastructure (Ireland)
  - Improving funding for research centres of excellence with the goal of attracting return migration and foreign talent (Ireland, U.K., Spain)
- Mobility measures for students:
  - The Bologna Process to foster intra-EU mobility
  - Improving the provision of information about work/study opportunities (Australia, Canada, U.K.)
  - Facilitate access to labour market for foreign students (U.K., U.S.A.)

But education reform must be linked to policy action in other areas such as labour reforms if it is to realise its full potential.

Lastly, I should like to make the case for improvement of existing and development of new indicators.

The measurement of the contribution to human capital to economic and social well-being is fraught with measurement problems. Inputs and outputs rely on proxies such as levels of education that do not lend themselves to disaggregation. Several issues arise here:

– ICT skills are one area in particular that need better measurement.
– In addition, detailed education and labour market information on immigrants – for historical and ideological/cultural reasons is limited. In particular, data on ethnic immigrants and education and labour outcomes is difficult to collect. This must change if we want to improve policies.
– Career paths of researchers (OECD Careers of Doctorate Holders (CDH) Project). As a subset of HRST, Ph.D.s deserve special attention given their contribution to research and innovation.

Europe has started addressing the challenges of building human capital, but it must stay on the path of reform if it is to reap the benefits in terms of improvements of economic growth and social well-being. Lastly, I should like to make the case for improvement of existing and development of new indicators.

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Education and Skills: Is Europe on the Right Path?

I shall talk in this presentation from the perspective of an economist engaged in teaching and recruiting young economists for careers in policy making. My perspective is global – the IMF Institute works every day on eight campuses in six time zones around the world – but it is narrow insofar as I have no wisdom about education outside the field of economics. I want to make five points in this presentation:

– There is a deep hunger for knowledge – especially practical analytics – all over the world. This can be a powerful force for good. But the boundary between information on the one hand and advocacy or spin or propaganda on the other is very thin, and crossing it can be destructive of reputation and credibility.
– The business of making government policy is very complicated, and the task of explaining the policy alternatives is even more exacting. Governmental institutions in open democracies should see clear policy exposition – that is, an educational function – as an essential part of their duties.
– Public educational institutions – high schools and universities – should teach citizens what they need to know to make informed personal choices, in the areas of economics and finance, and to be engaged in public discourse so as to make sensible political choices.
– Economics education at the university and graduate school level should represent the field as a rigorous examination of *socially-significant policy problems*. It should be neither a stand-alone branch of applied mathematics nor an undisciplined discussion of competing political ideologies.
– Broadening international access to the great western institutions of higher education may be one of the most effective tools for ensuring the vigor and longevity of the political and social arrangements they exemplify – that is, free and open democratic politics and market economics.

Now, this being an economics conference, I should start by writing down a production function, differentiating it with respect to labor, and showing how the marginal product of labor – and thus the equilibrium wage rate – depends positively on human capital – that is, the education and skill set of the workers. I could go on then to model education as investment. But much of this analysis has already been done at this conference – and more competently than I could do it – and, besides, I want the freedom to indulge in a very broad discussion. So I shall be, unashamedly, anecdotal.

At the start of the transition to market economics in the old Warsaw pact countries of Central and Eastern Europe, I led the IMF teams on German Unification and on Czechoslovakia. This involved many struggles with unfamiliar economic terms and concepts and seemingly peculiar data catchment systems. I recall one long meeting in Prague in particular. We were struggling to put the old communist output measures into GDP format, but were getting strange results largely because of the inventory figures. Eventually in utter frustra-

tion I walked across to the blackboard in the room and wrote down some mathematical notation: Was it a first or a second derivative they were measuring? We were looking for the second derivative. There was a moment's silence and then a grunt of delight from one of our Czechoslovak interlocutors – now it all made sense. We had a language in common, a hunger for understanding had been appeased.

A few years later, I read an article by a Czech central bank official – who may well have been in the room that day. He wrote about the intense need to understand this economics of the west, of how a succession of courses at the Joint Vienna Institute (JVI) and the IMF Institute in Washington had helped fill this need, about the joy with which he had returned to Prague after these courses to share the material with his colleagues and to begin canvassing for them to be admitted to the next course.

Not long ago and not far from where we are now, I sat at a dinner with a group of young economists from Eastern Europe who had just completed a course at the JVI. Three of them, who were from a particularly repressive regime, told me that the course had been wonderful, that it had taught them things that they really needed to know. I asked slyly: "Will you be able to use this material in your country in the present circumstances?" They exchanged nervous glances, then one replied smiling, while the others nodded: "Not yet. But when he goes we will be ready."

What I mean to say by way of these anecdotes is that the pervasive hunger for knowledge and understanding is a powerful force for good.

I am not naïve about this. There are countries with dominant entrenched lobbies that serve narrow interests and are impervious to arguments about general welfare. But in my experience it is astounding how many good people there are in public life who want to understand the issues fully and to be able to argue through all the options and explain their positions to their constituents.

There is, of course, also a deep strain of skepticism – so much of what passes for information in our political lives today is advocacy or spin, designed not to inform or explain but to persuade or manipulate. Moreover, a perceived western, or even Anglo-Saxon, intellectual hegemony in the field of economics exacerbates suspicion. These issues are evident in our work at IMF Institute affiliates in the Middle East, Africa, Latin America, and Asia. To be effective in these circumstances it is essential to allow equal time to opposite views and to examine alternative positions carefully and honestly; people cannot be bludgeoned into concurrence, they can only be allowed to draw conclusions from the arguments and the evidence. We are not trying to win short-term arguments, but to help build an enduring intellectual framework for policy analysis.

When, a while back, the Governor of the People's Bank of China asked the IMF Institute to arrange a seminar for high officials on the Chinese exchange rate regime, it was not because he thought we would agree with the official Chinese position. But he knew that we would bring together the best minds representing competing views, and that we would see our job as trying to examine the

fundamental assumptions or strands of analysis that led to different conclusions – in short, that this would be an honest examination.

For the IMF (and, by association, the JVI) the idea of a well-trained group of professional economic policymakers in the countries with which we conduct surveillance and program negotiations is crucially important. We need interlocutors who understand what we say and are capable of evaluating it critically and agreeing or disputing or suggesting alternatives. It is impossible to get national authorities to really take ownership of an economic strategy unless they have been fully engaged in its creation. Moreover, the world is becoming increasingly more complex – witness all of the recent work we have been doing in trying to understand the interaction of global finance with national macroeconomic policy – and, as a consequence, our training mission is continuously trying to catch up. The recent work of the JVI – both curriculum development and high level seminars – is testament to just how important it is to cater to the rapidly evolving needs of our client countries. So, as my colleague John Lipsky has said recently, training, educating, and providing information are, for us, a core business. As I have suggested above, I think that this is an equally important component of the business of national government agencies and central banks.

Let me turn now from the issue of educating the policymakers to the broader issue of education. In his wonderful book *Capitalism and Freedom*[1] Milton Friedman discusses whether education should be seen as a public good – financed with public money – or as a private investment. Crudely stated, one of his conclusions is that general education – the sort of thing we get at school and in undergraduate studies – is beneficial to the citizenry at large. It improves social welfare by allowing citizens to make informed political choices; it should, therefore, be seen as social investment and subsidized by government.[2] (He argues, on the other hand, that investment in a specific professional or vocational skill – e.g., law or medicine – produces private returns and should be privately financed.)

Friedman's rule seems by and large sensible to me – although one could debate whether certain investments in skills like those of the medical profession do not also have some social returns. But I think what we include in this general, social-welfare-raising education is far too narrow and out of date. We need to teach students at schools and universities at least enough about economics and finance to facilitate an understanding of the issues they will face in their personal finances – given demographics in many of our countries, their decisions will soon have serious macroeconomic implications – and of the political choices they will have to make as voters.

I believe, moreover, that people want this training. One of the most

[1] *The University of Chicago Press, 1962.*

[2] *This, of course, does not mean that it should be supplied by a government monopoly or that providers should not be subject to competitive pressures.*

popular lectures in a course I used to teach at the Johns Hopkins University was on unintended consequences. We would analyze how a tax could be imposed on one group (capitalists for example) and the true burden would fall on another group (perhaps unskilled workers) and how this all would be determined not by the way the tax law was written but by a set of demand and supply elasticities. We would also discuss how a well-meaning egalitarian regime operating in a global market economy might, by seeking to raise the wages of workers at the bottom of the distribution and to constrain the after-tax incomes of those at the top of the distribution, worsen the circumstances of both groups. It was always a delight to me to see how this discussion could influence the way these students read the press reports on economic policy. There were no obvious policy desiderata except at the most general level, but there was a sensible framework for discussion and debate. We need to provide this to our citizens if we are to have successful democracies.

What about the education of professional economists – a natural preoccupation of mine as I am involved every day in (a) the teaching of professional economists, and (b) the recruiting of professional economists from the various universities across the world. Here again, let me offer an anecdote. About 20 years ago some colleagues and I were having lunch with Hans Tietmeier, then a senior official at the Finance Ministry in Germany. I was teasing Tietmeier by lamenting the lack of rigor in the typical German economics graduate school curriculum. He responded in typically robust fashion:"German universities may not teach enough rigor, but American universities don't teach any sensible political economy." Of course, we were both exaggerating to enliven the discussion, but there was truth in his assertion.[3]

These days, even within the economics profession in the United States, questions are being raised about whether the rigor of our analysis – pushing the utility- and profit-maximizing paradigm to its logical conclusion by insisting on microeconomic foundations for the behavior of all agents in all models – is not leading us on a path toward elegant theoretical constructs that have less and less traction on the policy problems of a real world with seemingly capricious distortions and rigidities.[4] In a recent article Greg Mankiw notes: "God put macroeconomists on earth not to propose and test elegant theories but to solve practical problems. The problems He gave us, moreover, were not modest in dimension."[5]

My own view is that economics graduate schools should inculcate habits of rigorous analysis with all of the sophisticated mathematics and

[3] *I subsequently went off and read all the German theorists that Hans had mentioned – including Walter Eucken and, of course, the writings of Ludwig Erhard – and learned about the importance of German ideas like* Ordnungspolitik *and the* Soziale Marktwirtschaft*; I even went so far as to write about them at times. See, for example, Lipschitz and Mayer: Accepted Economic Paradigms Guide German Policies (1988).*

[4] *See, for example, Chari and Kehoe: Modern Macroeconomics in Practice: How Theory is Shaping Policy, and Mankiw: The Macroeconomist as Scientist and Engineer (2006).*

[5] *Mankiw op. cit., page 29.*

econometrics that that requires. But the field of economics should seek to attract students with a real interest in social and political problems – not failed mathematicians looking for another area where one can make a living by applying fancy techniques. So we need a healthy dose of political economy to leaven the analytical load and to give a distinctive policy flavor to the study of economics. Perhaps the Bologna Process will point in the right direction for higher education in Europe.

Finally, let me say something about soft power. The importance of education for winning hearts and minds has long been understood. One could find historical examples going back to Herod in Rome and before. But in modern times one thinks of the U.S. Fulbright Program, started in 1946, which encourages two-way exchanges, and Patrice Lumumba University in Moscow, founded in 1960 with the explicit objective of educating future socialist leaders in developing countries. A survey of leaders in developing countries in 1990 found that two thirds of them had studied abroad – and this figure would be even higher for central bank governors and finance ministers.[6] Student exchanges between the U.S.A. and the U.S.S.R. started in the late 1950s. Alexander Yakovlev, one of the intellectual architects of perestroika, was one of four Soviet graduate students enrolled at Columbia University in the autumn of 1958. The competition between intellectual paradigms is a long war, not a single battle; and those paradigms that are robust to the exacting tests of real world developments will prevail.

It is particularly at times of massive social and political transition that a common language for analysis and intellectual activity is important – witness the extraordinary influence of the 20,000 alumni of the Joint Vienna Institute. And this need for a commonly accessible intellectual framework applies as much to Africa, Asia, Latin America, and the Middle East as to the transition in Europe.

I led the IMF team to South Africa during the transition from the

old de Klerk Apartheid government to the new Mandela government. Shortly before the change there was fear in the capital markets and a very real danger of massive capital flight during the period leading up to the elections; this would have left the new government mired in economic crisis. We needed to negotiate an agreement with all political parties that would guarantee a sensible post-election economic strategy, allay the fears of investors and creditors, and thus avert a crisis. This was hard to do: some of the groups who would have to be party to the agreement were still shooting at one another in the streets, and some saw the Fund as

[6] *Spilimbergo: Democracy and Foreign Education (2006).*

an evil representative of western imperialism. With each group the pattern was the same: we would ask about their post-election economic objectives, put some data up on the board to put these objectives into an accessible analytic framework, and then embark on an inclusive discussion about how one would go about realizing them. In most cases there was initial mistrust – Was this truth or spin? Were we being honest and helpful, or deceitful? – followed by genuine interest, and, finally, full engagement. The most radical group arrived with bodyguards and guns and an attitude of great hostility. But they also had a senior economic advisor who had studied in Germany with one of my colleagues and without whom a breakthrough would have been near impossible. (In the end, I might add, all parties signed on to the agreement and honored its terms. A potential crisis was averted.)

When wise ambassadors for the United States and Europe go abroad – sometimes to countries less enthused about institutions like democracy and markets – they are not trying to spread a culture of McDonald's and rap music, or even of haute cuisine and Mozart. Rather, they are trying to explain the epistemological imperatives of their culture: intellectual traditions that encourage exploration and critical questioning. They are, at the same time, encouraging others to examine western culture – high and low – to laugh at the silliest aspects of it, to try to understand and appreciate other parts, to pick and choose, to accept and reject.

My colleague, Antonio Spilimbergo, has recently completed a fascinating empirical study using a unique set of panel data.[7] He shows that foreign-educated individuals educated in democratic countries serve to promote democracy in their own countries. This result is robust to various specifications and tests. But a foreign education in a non-democratic country has no democratic influence in the home country. Perhaps it is the way open societies go about the business of learning – rather than the content of that learning – that explains this discrepancy. But, whatever the precise mechanism, I believe that providing greater foreign access to the great European and American institutions of higher learning is a policy that will pay significant global dividends.

In conclusion then:
In open societies we need politicians and officials capable of informed discussion on economic policy options. We need an economically-literate electorate capable of following these discussions and of making sensible choices. We need academic and governmental institutions that take seriously the roles of educating citizens on public policy issues and elucidating the policy choices under discussion. We need a professional class of economists – in academe and elsewhere – that is both analytically rigorous and engaged in real issues of political economy. And we need to open our universities to those from other societies where, perhaps, the imperative of critical discussion and debate is less woven into the intellectual fabric.

[7] *ibid.*

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Does Higher Education Matter?

In the 16th century, in the immediate aftermath of the Printing Revolution and the Reformation, Western Europe experienced an educational revolution, with Spain leading the pack. In parallel to the rise and fall of the Spanish empire, the number of universities and students in Spain exploded in the late 16th century and collapsed in the course of the 17th century.

Historians have debated the reasons for "the decline of Spain," which lasted a couple of hundred years and reversed only recently (most dramatically after Spain joined the European Union in 1986).[1] This essay argues that an excess of higher education – or rather, an excess of the wrong kind of higher education and a dearth of the right kind – in early modern Spain contributed to the decline of Spain.[2] The Spanish case holds lessons for university reform in modern Europe.

Human Capital, Signaling and Culture Shift

With the 1999 Bologna Declaration, the ministers of education representing 29 European countries promised to establish a European Higher Education Area by 2010. The plan is to standardize higher education degrees and create quality assurance mechanisms. The idea is to promote competitiveness, growth, and jobs by boosting higher education.[3]

Implicit in this effort is the *human capital theory* of education.[4] Individuals who invest in education become more productive and thus increase their personal incomes, which in turn raises national income.

Human capital theory comes with two propositions. First, higher education is a good of the "more is better" kind, which tends to be undersupplied. To the extent that higher education generates positive externalities (for example, because individuals who are highly educated and hence highly productive increase the productivity of their co-workers), individual investments in higher education will be suboptimally low in the aggregate.

Second, higher education in "useful" subjects such as business and engineering trumps higher education in "useless" subjects such as history and the humanities. Useful higher education is a production factor: it increases individual productivity and thus contributes to the national product. Useless higher education is a consumption good: it cultivates individual students without doing much of anything for economic development.

Two further theories of higher education – signaling and culture shift – challenge these two propositions of human capital theory.

According to *signaling theory,* higher education is a signaling device by which more productive individuals distinguish themselves from less productive individuals to get paid higher salaries.[5] Employers cannot observe

[1] *Hamilton (1938), Kamen (1978).*

[2] *Kagan (1974), Lohmann (2007).*

[3] *Corbett (2005).*

[4] *Becker (1964).*

[5] *Spence (1973).*

people's productivity directly, which prevents them from offering employment contracts that pay higher salaries to more productive types. The more productive types can attain a given level of higher education at a lower cost, compared to the less productive types; equivalently, for a given investment, the more productive types can achieve a higher level of education. Thus, a given type chooses to become more highly educated up to the point where the next-lower type falls short. Employers, who can observe people's educational credentials, can infer that a better educated person must be a more productive type. As a result, employers are willing to pay higher salaries to the better-educated.

People benefit from higher education because it translates into higher salaries for them. But higher education does not actually make them more productive, and so there is no positive effect at the aggregate level. Higher education is wasteful and oversupplied.

According to *culture shift theory*, a liberal arts education is critical for modernization and economic development.[6] Societies thrive not in the first place because their citizens hold useful skills that translate straightforwardly into personal and national income. They thrive because of favorable norms and institutions, which specify how people relate to each other and to government, church, and business. Norms and institutions that enable modernization do not drop out of the sky. They emerge as a result of social movements. Higher education can contribute to the emergence of favorable norms and institution by training public intellectuals, teachers, priests, lawyers, and other "symbolic workers."[7]

Higher education of the liberal arts kind tends to be undersupplied. To fix ideas, consider a liberal arts education that encourages people to tolerate religious diversity. An individual hardly has the incentives to invest money, time, and energy into becoming more tolerant. But society as a whole is likely to benefit if people stop excluding, or even killing, each other because they are suspicious of each others' religious practices.

To see these three theories of higher education in action, let us take a look at higher education and the decline of Spain.

Students and Society in Early Modern Spain[8]

Table 1 compares, for Western Europe and Spain, gross domestic product (GDP) per capita, expressed in 1990 international dollars, from 1000 to 1998 and the number of newly founded universities from 1200 to 1945.

Buried in these GDP numbers is the story of the rise and fall of Spain.

[6] *The theory of culture shift is due to Inglehart and Norris (2003), Norris and Inglehart (2004), and Inglehart and Welzel (2005). Lohmann (2007) applies this theory to higher education. In the Anglo-Saxon world, John Henry Newman stands for a university-based liberal arts education (Newman 1982 [1873]). In the* deutscher Sprachraum *(German language zone), the corresponding concept of* humanistische Bildung *(humanistic education) is represented by the German idealists, especially Wilhelm von Humboldt (1956[1810/1896]).*

[7] *The concept of symbolic workers is due to Reich (1991).*

[8] *Kagan (1974).*

Table 1

GDP per Capita, 1000–1998, and Number of Universities Founded, 1200–1945, in Western Europe and Spain

Year	GDP per capita (in 1990 USD)		Period	Number of universities founded	
	Western Europe	Spain (in % of Western Europe)		Western Europe	Spain
1000	400	×			
			1200–1500	55	7
1500	774	90			
			1500–1600	28	10
1600	894	101			
			1600–1700	18	0
1700	1024	88			
			1700–1820	58	0
1820	1232	86			
			1820–1870	62	7
1870	1974	70			
			1870–1913	80	1
1913	3473	65			
			1913–1945	85	1
1950	4594	52			
			×	×	×
1973	11534	76			
			×	×	×
1998	17921	79			

Sources: Compiled by the author based on Maddison (2006), p. 206; Rüegg (2004).

Around 1580, Spain was the leading power in Europe; one hundred years later, it was not. Spain's stagnancy relative to the rest of Western Europe ended up lasting a couple of centuries.

Historians have debated the "whether and why" of the decline of Spain. What went wrong? In the 16th century, Spain excelled in global exploration, colonial expansion, and trade across the oceans. But Spain was overextended with its empire: it lacked the tax revenue and people to fight the wars needed to keep the empire up and running.

Meanwhile, the plague brought about a demographic decline. The resulting labor shortage in the agricultural sector led to famine, which exacerbated the demographic decline. The shortage of people also made necessary the costly hiring of foreign soldiers, which further distressed the government budget.

Cultural values, too, explain the Spanish conundrum. Spain was riven by religious conflict. Militant anti-semitism encouraged the mass conversion of Jews to Christianity and (in 1492) the mass expulsion of Jews who refused to convert. Religious violence also forced conversions of Muslims to Christianity and (in 1609) the mass expulsion of Moriscos; Spain thus lost several hundred thousand Spanish Moors at a time when it could ill-afford the population loss in the agricultural sector. In the aftermath of the *reformation*, religious wars pitted Catholics and Protestants against each other all over Europe; in Spain, which was controlled by the Catholics, the Spanish Inquisition spread fear and loathing as it prosecuted real and imagined heresy.

Table 2

Student Matriculations in Salamanca, 1555–1810

Period	Student matriculations (quinquennial averages)				Year
	Total	Canon and civil law	Grammar, arts and theology	Medicine	
1555–1560	4,512	1,699	2,794	157	1555
1585–1590	6,633	3,78	2,388	194	1585
1605–1610	4,711	2,7	1,301	164	1605
1620–1625	5,919	4,287	997	163	1620
1650–1655	2,949	1,597	423	42	1650
1700–1705	1,895	547	268	50	1700
1805–1810	718	221	301	46	1805

Source: Compiled by the author based on Kagan (1974), pp. 247 and 250–251.

Spain further harbored cultural values that ran counter to the "Protestant ethics" which, according to Max Weber, served as the spiritual foundation of capitalism.[9] The Spaniards celebrated leisure and nobility and despised manual labor and business people. They preferred to invest in a noble title – or educational credentials – that would give them plum jobs in the royal court or the Church, rather than investing in a business.

Table 1 shows how the rise and fall of Spanish GDP per capita is reflected in the number of university foundings. The emergence of the Spanish empire, in the 16th century, was accompanied by an explosion of universities. The decline of Spain, in the 17th and 18th centuries, was met with zero university foundings.

The same story can be told in student numbers. By the end of the 16th century, Spanish universities were educating about 20,000 students annually. With over 5% of the 15- to 24-year-old males entering college (admittedly, many of them failed to graduate), Spain sported the most educated society in Europe. By 1700, the number of students had collapsed to 5,000; by 1820, to 1,000.[10]

Let us take a closer look at student matriculations in Salamanca, which dates back to 1218; it is Spain's oldest university and one of oldest universities in Europe. Table 2 shows total matriculations along with matriculations in canon and civil law; grammar, the arts, and theology; and medicine from 1555 to 1810. (Other universities in Spain exhibit roughly the same pattern.)

The explosion and collapse of total student matriculations was driven by a bubble in the number of law students. In the course of the 16th century, there was a shift away from the study of grammar, arts, and theology and towards the study of canon and civil law. The number of students studying medicine, which rose and fell with the total number of students, remained low compared to the number studying law.

The increase in the total number of students, and in particular the shift towards canon and civil law, is con-

[9] *Weber (1934 [1904/05]).*

[10] *Kagan (1974, p. 200).*

sistent with human capital theory. With the emergence of strong monarchical government and a militant church, which had an empire and an inquisition to run, royal and church bureaucracies needed to be staffed, and the positions went to university-educated men who had studied civil or canon law. At about the same time, Spanish society developed and complexified, and the number of lawsuits exploded as disputes over rights and boundaries were typically carried out in court. For all of these reasons, the study of law was the ticket to wealth, influence, and status.

Next, signaling theory – or rather, a variant of signaling theory – explains the deterioration of higher education. Not only can employers not observe students' productivity; they also cannot look into students' minds to see how educated they are; all employers can observe are the students' educational credentials. For this reason, there is a powerful incentive for universities and students to collude in "hollowing out" the actual education on the ground. After all, it takes resources and time and energy to educate and to get educated – it is so much easier for universities to produce empty credentials and for the students to accept them.

This is exactly what happened in Spain. As a result, the increase in university-educated lawyers failed to contribute much of anything to the Spanish national product. At the same time, the vastly increased competition for the limited number of positions in government and Church implied that few law students succeeded in getting the prestigious jobs they aspired to. Another possibility is that their prospective employers increasingly saw through their empty credentials and thus stopped hiring them in great number. Either way, law degrees dropped in value, and the law school bubble burst.

Finally, culture shift theory explains how the crowding out of liberal arts education contributed to the decline of Spain. The Spanish universities were disconnected from the larger intellectual and political developments in Europe between the 17th and 20th centuries: the Scientific Revolution and the Enlightenment, capitalism and democracy. They were

missing the experimental sciences, the modern languages, history and political economy: these fields of study, which gradually emerged in the 17th and 18th centuries, were adopted by the 19th century German research university, which in turn was widely copied across Europe. Spain lacked a channel by which all of these developments could have entered the minds of the university-educated elite.

The Spanish universities failed their country by allowing the unproductive cultural values of the Spanish elite to fester, which dragged down Spain – for centuries on end.

What lessons does the Spanish experience hold for university reform in Europe today?

Lessons for Modern Europe

The Spanish case study points to two unfortunate tendencies in higher education. First, higher education of the human capital kind tends to deteriorate into a higher education of the signaling kind. Second, higher education of the human capital kind tends to crowd out higher education of the liberal arts kind.

The first tendency is present in Europe today. Alison Wolf, of "Does Education Matter?" (2002) fame, argues that government-sponsored "growth through educational engineering" is a failure precisely because it is giving rise to an arms race for empty credentials. The result is overeducation and waste.

How can this tendency be kept in check? How can we encourage professors and students to care about learning for its own sake? Enter the 19th century German research university as envisioned by Wilhelm von Humboldt.[11] Because it selects professors for their research competence, there is a good chance that the professors will inherently care about their field and preserve the integrity of the teaching standards even if they have no immediate incentives to do so. Moreover, since the German research university bundled research and teaching, the research professors were involved in the teaching enterprise, and they required their student to engage in creative inquiry rather than rote learning. (Even if daily educational practice in the 19th century German research university did not live up to Humboldt's ideals, we must compare the result not to some nonexistent ideal university but to the alternative, as embodied by the moribund Spanish universities.)

While the modern research university has its roots in the 19th century German university, the idea that teachers should be intellectually active dates back to the Middle Ages. In Bologna and Paris, the masters of law and theology rode the cutting edge of the collective belief systems of their time, and they passed on their improved understanding to their students, who took on positions in royal households, city governments, and the Church bureaucracy. The medieval university thus enabled medieval society to move out of the Dark Ages into the Light. They thereby contributed to the increase in GDP per capita between 1000 and 1500 and beyond.

The idea of a liberal arts education, too, goes back to the Middle Ages. The *artes liberales* served the purpose of training the free man (liber is Latin for free), in contrast to the *artes illiberales*, which are pursued for their economic value. Undergraduate students received a liberal arts education consisting of grammar, rhetoric,

[11] *Humboldt (1956[1810/1896]).*

dialectic, arithmetic, geometry, astronomy, and music, and then some subset of them moved on to graduate school where they received a professional training in law, theology, or medicine. (A Master's degree in theology, which prepared students for a career in the Church, was the equivalent of a modern Master's of Business Administration.)

Buried in here is the second lesson for modern Europe. "Useless" liberal arts education and "useful" professional training are not mutually exclusive. The educational ideal is to combine an education that builds cultural capital with an education that creates human capital.

Today, the Bologna process is forcing national university systems to partition university degrees into bachelor's, master's, and doctoral degrees that are easily comparable and transferable across countries. In Germany, the replacement of the one-part Diplom degree with two degrees, the bachelor's and master's, has been discussed mainly as a means to reduce overcrowding at universities (by moving people who take five years to get a Diplom into the three-year bachelor's) or to conform to the European standard; there is also talk of declining standards.[12] But the partitioning of higher education degrees into a non-utilitarian general-education bachelor's degree and a utilitarian specialized master's degree is critical for an altogether different reason: it balances the two kinds of higher education that Do Good for society – the culture shift kind and the human capital kind.

Higher education of the culture shift kind is urgently needed in Europe today. Europe is a multi-ethnic and multi-religious society, and Europeans must learn to live with the religious "other." They must grapple with womens' higher education and the integration of women into the labor force, which requires a rethinking of values relating to family, children, sexuality, abortion, divorce, equal rights in the workplace, and sexual harassment. As the number of old retired people increases relative to the number of young working people, with ominous implications for the solidity of retirement systems, people's attitudes towards work, vacation, and retirement will be challenged. Meanwhile, global warming calls for a change in mindset about the consumerist foundations of capitalism.

Once again, all of these changes do not drop out of the sky. The Spanish experience tells us that cultural values contribute to the rise and decline of nations just as surely as economic or environmental constraints. The universities of Europe can support or thwart the necessary changes to the collective belief system, as a result of which Europe will fly or die: this is the lesson of higher education in early modern Spain.

[12] *Wiarda (2005).*

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European Universities Must Get Their Act Together[1]

As *The Economist* in *The Brains Business Survey* (10 September, 2005) points out, academia in Europe are not ready for the challenges ahead. Realising mass access without sacrificing excellence demands a dynamic and competitive university system. The European challenge is to get the diversity and quality of the U.S.A. without hurting accessibility. A key problem is that central planning and steering cause a generic lack of variety, monopolistic behaviour, scale increases and grade inflation. The explosive growth in enrolment has led to erosion of academic standards. Reforms of the European university system should tackle these issues. European universities also have much less resources per student than their U.S. counterparts, so it is crucial to raise tuition fees without harming access.

Higher Education in Europe

Enrollment rates more than doubled during the last thirty years in virtually every country. From a lifetime perspective students will not be poor and can borrow more. Costs of higher education (EUR 45,000) are much less than lifetime earnings, hence higher education is an excellent investment. Also, earnings for different studies are different, but tuition fees are often the same. Typically, prices charged to students do not depend on costs. European universities suffer from bureaucracy and lack of autonomy. Almost all parameters are fixed: subsidies per student are fixed, tuition fees cannot be varied, the number of places for each course is often fixed by the ministry of education, and applicants cannot be refused once they have passed their national exams. Universities find it thus tough to respond to changes in demand and engage in competition. Much time and energy goes into securing government subsidies for education and research rather than into academic entrepreneurship.

Higher PISA (Programme for International Student Assessment) scores suggest higher educational attainment, lower dropout rates, shorter study lengths for those who actually graduate and higher wage returns. Lower student/staff ratios are associated with higher educational attainment, lower dropout rates, shorter enrollment duration for graduates and higher wage returns. Targeting government funding at students rather than universities suggest higher attainment, higher dropout rates, slightly shorter study duration for those who graduate and lower wage returns. If students borrow more and get less grants, or the share of private expenditures increases in general, this may be associated with higher attainment shorter duration of study for those who graduate, lower dropout rates and bigger wage returns.

Students, state and sponsors lack the information necessary to judge the quality of higher education. Intrinsic motivation of students and staff and trust are vital and diminish if too many monetary incentives are introduced. Objectives are typically

[1] *Based on Jacobs and van der Ploeg (2006).*

not profits, but how well they do compared to their peers. Rankings and peer reviews and the competition that result from it, drives universities. Peer effects are also crucial for students as they form values, academic interests and aspirations in the interchange with other students. Universities also need funding from students, alumni, estates and sponsors. However, non-profit enterprises also have a tendency for bureaucratic slack; witness big offices for central administration, "prestige projects", etc. They also tend to underestimate the costs of its capital services such as buildings and campuses.

Potential Merits of the Bologna Reforms

The advantages of the Bologna reforms towards introducing system of bachelors and masters in Europe are:

- Reduce the risk of choosing the wrong study and encourages students to take more demanding studies. A first degree in mathematics or science that lasts three rather than five or six years is a less daunting prospect. Those who like mathematics and science go on afterwards with a specialised degree. By the same token, the Bologna reforms allow students to wait in the presence of uncertainty with regards to their capacities, interests and job market circumstances.
- Stimulate students to combine different studies. Much of technological and economic progress in contemporary society occurs in the twilight zone between different disciplines. Moreover, university students who discover that they have more of a professional interest can switch to a professional master course at a college of professional higher education and some of the more academically minded vocational bachelors may switch to university.
- Stimulate variety. Many European countries offer a higher average quality than the U.S.A., but have less centres of excellence, less diversity and less flexibility, and less choice between intensive and extensive forms of education.
- Encourage students to finish their studies more quickly as students will be matched better with universities because risks of doing a wrong study diminishes, variety increases, and students have the option to return. The Anglo-Saxon system of higher education features almost no dropouts, because students know exactly when to study and when they can work or have fun.
- Engender competition between a larger number of shorter degree programmes. Currently, however, many universities in Europe are stifling competition as may be witnessed from many mergers and the standardisation of many degrees. If students are unhappy with a particular degree programme, they should vote with their feet and go to another programme.
- It makes the European system compatible with systems of higher education found in U.K., U.S.A., Canada, Australia, New Zealand, India, Pakistan and much of Asia and Latin America. This enhanced transparency encourages European universities to compete on a global scale.

The Quest for Quality

The Times Higher Education ranking of the world's top 200 universities considers peer review, international faculty, international students, student/staff ratios and faculty citations scores. Interesting is that 41 of the top fifty universities are from countries with an Anglo-Saxon system of education. Continental Europe (excluding Switzerland) only has three universities in the top fifty. European universities provide decent education for all with not much diversity in the fare offered. Apart from some conservatoires, theatre schools and higher hotel schools, most universities are reluctant to select. The U.S.A. has considerable experience in aptitude rather than ability tests. Ability or knowledge should not be used for selection because they can be crammed by the fortunate ones with extra training. Unfortunately, there are signals that during the last few years the aptitude tests have become more like ability tests. This threatens to move the U.S.A. away from a meritocracy towards a system where family ties and background matter. Europe would benefit from more selective entries. The majority of universities in continental Europe accept on the basis of a high school diploma only. Hence, many first year students fail and real selection takes place after one year and sometimes even later. This leads to a huge waste of resources.

In much of Europe, the market for lecturers and professors is closed to outsiders. Many scholars with excellent publication records are defeated by local heroes with the right connections. In France, Italy and Germany outsiders and foreigners find it difficult to get a chair, and otherwise they get scared away by stifling bureaucracies. The U.K., Scandinavia and the Netherlands have more open recruitment, so benefit from a more competitive environment. Many European universities cannot reward and attract young talent, while older academics stay on even if their productivity has declined substantially. The severe tenure hurdles and the competitive publication race one sees in the U.S.A., is less pronounced in Europe.

Peer review gives incentives for high-quality research, but is weak in Europe. Where peer review of research has taken off, it tends to overshoot at the expense of educational quality, especially if professors mark their own exams. Apart from the U.K. and perhaps Denmark, external examiners are not used to audit contents or grades. But then there is a danger of grade inflation, especially if funding depends on the number of awarded degrees.

How to Set Subsidies and Tuition Fees?

Individuals invest more in a particular study if interest costs are low, they are not credit constrained, subsidies are high, tuition fees are low, expected graduate wages are high, and academic ability/aptitude for that study is large. Conversely, students are discouraged to take courses that give little esteem and a lot of sweat. It makes sense for the government to make sufficient borrowing possible, so that students are not credit constrained in financing their education and costs of living.

Education is a "customer-input technology", since students are both consumers and co-producers of edu-

cation. Institutions generate excess demand for their services by selling below cost in order to control who they sell to. Selecting and attracting the smartest students generates a positive feedback loop as it raises the quality and reputation of the institute and thus increases further demand from smart students. Having high-quality students improves academic excellence and makes it possible to attract much better employees/professors and funding from sponsors and the state.

Without peer group or reputation effects degree profit maximizing universities set prices to a mark-up on marginal cost. The mark-up is particularly high for courses with low price elasticity of demand such as pure mathematics or anthropology. These courses may have high marginal cost anyway, so are extra likely to be expensive in the absence of cross subsidies or special government support. If peer group and reputation effects matter, tuition fees are higher for the less able or less motivated students and lower for the smart students. Hence, universities award scholarships or give discounts to bright students.

The government may support merit studies that are of interest to society as a whole and will not be provided by the market, while generating public benefits ("educational welfare"). One could think of, say, anthropology, Sanskrit or pure mathematics. The government may also support studies that contribute to citizenship, democratic participation and the transmission of (cultural) knowledge and values or that induce positive R&D externalities and growth. The government may want to reduce the popularity of studies that lead to excessive status or rent seeking and signalling. The government may give a larger weight on individuals from a disadvantaged background with relatively poor parents.

Uniform tuition fees are not optimal if social returns differ between disciplines and students. Subsidies should therefore be optimally targeted to fields of study that have the largest social returns. Furthermore, subsidies should be targeted towards the students that appear to generate most social value. Also, subsidies on studies with a relatively large private return compared to the social return violate optimal rules for education subsidies. Subsidies should be directed towards studies with a large social value, not a large private value.

Most students go to their local university. The optimal tuition fees are higher for such students, because their price elasticity of demand is lower. Also, the government has insufficient information about the preferences of individual students and the supply of courses and may wish to use vouchers rather than subsidies to universities. By giving students personal vouchers, which they can use to pay for their courses, the government encourages students to "vote with their feet". This fosters competition between universities.

Curbing Monopolistic Practices

In response to scarcer public budgets the scale of universities has increased at the expense of creating public monopolies. Such monopolies reduce quality ("grade inflation"), ignore demand of students and employers, and increase overhead costs. Universities

engage in a race to attract students and thus more state funds, sometimes fuelled by funding based on student numbers, even when this induces grade inflation. Monopolistic price setting drives up tuition fees and lowers quantity and quality of supply of education, especially if the price elasticity of demand is low. Subsidies for a course have to be large if the price elasticity of demand for that particular course is low. Since the price elasticity of demand differs between disciplines, subsidies should be differentiated accordingly.

Both output and input funding have unintended side effects. Output funding to curb monopolistic practices has the unintended disadvantage that it induces grade inflation and reduces incentives to cut costs. Input funding does not induce grade inflation but leaves monopolistic practices in tact and stimulates efficiency. One thus has to strike a tough trade-off between, on the one hand, avoiding grade inflation and inefficiently run universities, and, on the other hand, curbing monopolistic practices. Countries that rely on substantial output funding therefore often have quality safeguarding committees. If there is a lot of uncertainty and efforts of managers correlate little with cost reduction, high-powered incentives become less attractive.

Both private and public universities are better able to compete if subsidies are allocated directly to students through vouchers/grants. Students can spend the vouchers on the institution and courses of their preference. Barriers to enter the market for higher education should be lowered by abolishing historical funding and barring cross-subsidies that hinder fair competition. It helps if an independent authority publishes yearly performance criteria of universities. These criteria should cover dropout rates, average enrollment durations, average exam marks, student evaluations, quality of scientific publications, evaluations of independent scientific committees, etc. A level playing field can open national markets to the international environment, especially if students can get student loans for study abroad and can spend their vouchers abroad. In some countries internal checks and balances have

been destroyed by abolishing university democracy. Supervisory boards lack information from the "shop floor" to act as effective countervailing powers. In fact, neither governments, nor students, nor stakeholders, nor potential entrants seem able to discipline administrators in Europe.

Universities Should Rely More on Private Funding

Gap between Social and Private Returns Is Small and Declining

Each additional year of education, typically, raises wage incomes with 5 to 10%. These returns are generally larger for higher education. If social returns exceed private returns, education causes positive external effects to society and the government should support education. Estimating macro-

economic production functions where total output is explained by human as well as physical capital, one obtains macro returns to education of about 5% to 6% for each year of education. This is at the lower end of the estimated micro returns. Despite widespread belief in large externalities of education, social returns seem slightly lower than private returns.

However, empirical findings suggest that private returns to higher education are substantial. A popular argument is that the government should expand investment on education rather than reduce public debt, because the *private* returns from study are higher than the safe real return on government bonds. But the government should intervene in higher education because the social exceeds the private return to education not because private returns are large. The returns on education are higher than on government bonds because human capital is illiquid and more risky as labour incomes fluctuate due to business cycles, sectoral shifts, technological developments, international trade, etc. If skilled graduates earn higher incomes than low-skilled workers, it is profitable to invest in higher education. Especially, the U.S.A. and the U.K. have experienced dramatic increases of the skill premium.

Baumol's Cost Disease also Suggests More Private Funding

Teaching and research need to be done by highly qualified people and cannot be replaced by technology. Productivity growth in universities inevitably lags behind, so the cost and price of university education rise over time. This does not warrant a growing subsidy, since the increase in productivity elsewhere boosts purchasing power. Skill-biased technical change boosts the returns to study. Also, if higher education is a luxury good, it flourishes as technical progress makes people wealthier. Graduates can thus rationally use the higher returns to pay for the higher cost. Provided the opportunity costs of study do not increase as much as tuition fees, Baumol's cost disease expands the university sector. Hence, despite rising relative prices, the budget share of higher education rises over time.

To conclude, the crisis of European universities is not due to lack of public funds. There is no evidence that the social return to study exceeds the private return sufficiently to warrant bigger state subsidies. If anything, the private return to higher education seems to be rising as may be witnessed from the growing skill premium that graduates command in the market. However, higher education in many parts of Europe is starved of funds. The lack of funds will worsen due to the relentless operation of Baumol's cost disease. Much more can be asked from students provided they can make use of income-contingent loans. Even though student poverty is a real issue, graduates are relatively well off.

Misguided Equity Motives in Higher Education

Empirical research suggests that the ability of the student and long-run background factors *(culture, family, environment)* are the most important determinants of enrolment in higher education. Increasing enrolment in higher education of children from

lower socio-economic backgrounds requires therefore intervention in basic and secondary education and not generic subsidies for higher education. Equity grounds for large-scale subsidies to universities are doubtful. The vast majority of students in higher education belong to the richest half of the population. Moreover, the average tax payer has less lifetime income than the average graduate. All kind of politicians raise equity issues for the wrong reasons.

Some argue that university education is a "basic right" and should be free of charge. Universities should be accessible to all with sufficient academic capabilities. But this does not imply that higher education should be free from charge, neither does it imply that all should pay the same price, or should pursue the same quality of education. Another misguided argument is that subsidies are good as graduates pay more taxes. But the extra tax revenues do not recoup subsidies as most governments oversubsidise education (de la Fuente and Jimeno, 2005). Also, high-income earners who do not study do not receive subsidies, but still pay higher net taxes compared to those who do study. The poor may benefit from regressive higher education subsidies as they allow the government to use the progressive income tax at lower efficiency costs. Education subsidies reduce the tax distortions on human capital investments. The costs of study should therefore be tax deductible, but not the interest as this induces over-investment and distorts saving.

Some politicians reject "elitist" universities where the brightest students receive the best and most expensive education. This boils down to a plea for high taxes on investments in higher education and thus obstructs profitable investments in human capital. The best students migrate abroad. And individuals with lowest incomes are worse off than with direct redistribution. Both efficiency and equity are harmed by holding back talented students. Low tuition fees should not be used for equity reasons either, since it is inefficient to tax study at 100% above the fixed tuition fee for those who want to pay. Income redistribution should be carried out through the tax system and not through the education system. Too low tuition fees erode the tax base by causing under-investment and the poor are eventually worse off than with more progressive taxes. If the purpose of low fees is to guarantee access to universities, and not income equality, an income-contingent loan scheme is sufficient.

From Student Grants towards Income-Contingent Loans

Capital markets fail to deliver the loans to finance tuition and costs of living as banks cannot easily assess the risks of some students and face difficulties monitoring efforts by students and graduates. Resulting adverse selection and moral hazard effects give rise to high interest rates, credit rationing or even a collapse of the credit market for student loans. In addition, students are risk averse and hesitate to take up large loans. Indeed, risks associated with study cannot be insured due to incomplete contracts and information problems. Imperfect capital and insurance markets induce underinvestment in higher

education and hurt especially more loan-averse students from poorer backgrounds. Such students are forced to work, disturb the quality of teaching and more frequently dropout. Hence, there is a case to help such students so that they can pay higher tuition fees.

Income-Contingent Loans Rather than Student Grants and Subsidised Tuition

To tackle student poverty, students should be allowed to borrow for fees and cost of living. Income-contingent loans (ICL) can overcome problems of capital market imperfections with risk-averse students. ICL only require students to pay back principal and interest if their incomes after graduation are high enough. ICL thus offer a combination of loans and social insurance. If income risks of graduates are pooled, fewer subsidies are needed to eliminate risk aversion.

Commercial banks and insurers are unable to write contracts based on future incomes, but the government can enforce contracts through the tax authorities and verify earned incomes. By selection and tracking of student performance and denying funds to non-performing students, the government can more easily eliminate the "rotten apples". It can also collaborate with other tax authorities in Europe to track down graduates who try to default. In principle ICL feature no subsidies. However, the risks of default may be borne by society. ICL avoid perverse redistribution from the average taxpayer to students, because the majority of students comes from higher income classes and will belong to the higher income classes after graduation.

An alternative is a graduate tax (GT) where graduates receive grants financed by issue of government debt. Graduates repay a fraction of their lifetime incomes. The government pools this income to repay government debt including interest. From the individual perspective, repayments under a GT can exceed loans (including interest) as graduates with high incomes under a GT typically pay more. A GT thus has more insurance and redistribution than ICL. In practice, there is only a gradual difference between a GT and ICL. Under a GT repayments by high-earning graduates exceed the costs of their education and the surplus is used to subsidise low-earning graduates. If a GT is budgetary neutral, it is like ICL with risk pooling. In the absence of moral hazard, a GT provides more insurance than ICL and thus dominates a pure loan. With moral hazard, however, ICL provide better incentives as it features less insurance and performs better than a GT if risks are pooled among students and not borne by the government.

Both ICL and a GT distort labour supply and encourage delay of career choices in order to avoid repayments that are contingent on future incomes. Students may not put enough effort in studying hard; they may study longer or enrol in "fun" studies. These moral hazard problems can be avoided by selection and penalties for those who do not make satisfactory progress. A bigger loan warrants a higher tariff. This prevents cross-subsidies from cheap to expensive courses and avoids income redistribution from smart (high return, low risk) to less bright (low-return, high-risk) students. As a result, there is less

moral hazard and more pure insurance. To prevent cross-subsidies from profitable to loss-making studies, tariffs per course and per discipline must be differentiated. We prefer ICL to a GT, because they feature less insurance, allow more flexibility in repayment, and can be better tailored to avoid moral hazard. This is especially the case if repayment parameters are not very differentiated by size of loans, type of study or student performance. In that case, the GT causes a potentially large moral hazard problem as the link between funds received and repayments is weakened a lot.

Insurance of default risks may also give adverse selection. Rich students may avoid ICL or a GT to avoid risk pooling, except if the government finances the cost of bad debtors out of general funds rather than a surcharge on interest. These transfers benefit only students with very low lifetime incomes. An alternative is to make participation in ICL or a GT obligatory. Adverse selection also arises if talented but "poor" youngsters do not participate due to loan aversion and work rather than study. Good information may convince them that it pays to study and that they do not run large income risks if they finance their studies with ICL.

Summing -up

Private returns to higher education rise. The gap between social and private returns is not large enough to warrant more public investment in higher education. In spite of the expected rise in demand for higher education, governments in Europe do not allow supply to expand to meet demand through a battery of central planning and steering instruments. Politicians from the left and the right also form a "cordon sanitaire" against structural reforms by misguided equity and accessibility arguments. Due to "glass" ceilings on academic excellence many top academics flee to the U.S.A. Students are not challenged enough and drop out massively. European governments produce "one size fits all" higher education systems that fail to adapt to an increasingly international and competitive market for higher education. Lack of transparency implies lack of competition between universities. In Europe, cartels

are now firmly embedded through non-level playing fields between private and public institutions. Inappropriate methods of funding give rise to ever-rising overhead costs and status-seeking university bureaucrats wasting scarce resources on nonsense projects. We therefore propose the following reforms:

1. Allow universities to charge substantially higher tuition fees and also allow them to differentiate them by type of course depending on demand and costs. Allow universities to give discounts or scholarships to the smartest students, especially if they are from poorer backgrounds. Uniform fees reward bad students and harm good students. Smart rich students will be happy to pay for quality in view of

high expected returns. The objective is to increase university budgets, attract the best students and improve the quality of teaching. If fees function as signals of scarcity, there will be less mismatch of supply and demand of graduates.

2. Provide students with income-contingent loans where graduates repay their according to a percentage of future earnings. The objective is to provide insurance and guarantee universal access at low public costs and to avoid, but also stop students taking disruptive, part-time jobs. The government may wish to fund default out general funds or make participation obligatory.
3. Only subsidise studies whose social benefits exceed private benefits. Think of pure science which is needed to maintain fundamental research, *art history* or *archaeology*. Do not subsidies market-oriented, "status" or "signalling" studies like *business economics* or *law* as they are popular and graduates will earn a lot. Uniform subsidies induce excessive enrollment in fields with little social value and not enough in fields that have large private value. Universities that attract lots of smart students need less government subsidy.
4. Improve incentives for students and professors. Allow universities to select only the smartest and most motivated applicants irrespective of their social-economic background. Only give access to student loans and scholarships if students perform well. Introduce strong incentives for teachers and make sure that the best academics teach. Encourage universities to introduce tenure-track appointments where regular assessment of both teaching and research performance play a role in salary, tenure and promotion decisions. Base research budgets on academic performance and potential and allocate them by independent academics of a high reputation.
5. Foster competition among universities at home and abroad and accredit foreign institutions. Abolish historical funding and cross-subsidies that hinder fair competition. Both private and public institutions should compete on the same terms by allocating subsidies directly to students through vouchers. Intervene if scale and funding on basis of student numbers induces monopolistic behaviour, bureaucratic waste and grade inflation. Universities should publish students' dropout rates, enrolment durations, exam marks, student evaluations, scientific publications, evaluations of scientific visitation committees and so on.

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Skills and Education – Is Europe on the Right Way?

1 The Rise of the Knowledge Economy

Skills and education, or briefly knowledge, are replacing physical capital as the main driver of economic growth. There is a variety of *macroeconomic theories* analyzing the importance of knowledge and calculating its overall economic return. A main difference exists between the neo-classical approach and the new-growth theory: the latter emphasizes relatively large positive effects of knowledge (defined as stock of human capital) on the overall growth rates, whereas neo-classical estimates are more modest. Whether the results of the new-growth theory are implausibly optimistic, see Sianesi and Van Reenen (2003), will not be discussed in this article. Yet it seems evident, even according to neo-classical estimates, that skills and education are highly productivity enhancing with economy-wide spill-overs.

What is missing in macroeconomic analyses of skills and education is the impact of the *structure of the educational system* on growth. An exception is Krueger and Kumar (2004). Their key finding is that most of the growth gap between Europe and the U.S.A. since the 1980s stems from differences in the educational system. According to these authors, the focus on vocational education held European countries, especially Germany and Italy, back. In contrast, general education, as provided in the U.S.A., makes it easier for firms to adopt new technologies. Krueger and Kumar (2004) argue that general education is needed if countries want to move from "catch up" or "imitation" strategies to policies which foster innovation. "Frontrunner" strategies rely on the readiness of the workforce to accept new technologies. As a consequence, high participation rates in tertiary education seem to be of utmost importance for speeding up innovation and growth.

Microeconomic analyses, see Harmon et al. (2003), report a rate of return on schooling in the U.K. between 7% and 9% for men and between 9% and 11% for women. This result seems to be at the upper end of returns to schooling in Europe. Nordic countries appear to have lower average returns to schooling.

The Economist (2005) reports higher returns for tertiary education in the U.S.A. and U.K. than, e.g., in Germany and Italy. There the rates are higher than in the Scandinavian countries. Following the statistics provided by The Economist (2005), in the U.S.A. and U.K. the premium for tertiary education on earnings from employment, 25–64 years old, relative to upper secondary education, is nearly 100% (the income gets doubled), 60% in Germany and only 30–40% in Italy. Evidently the size of this premium influences the readiness of students to pay tuition fees or to engage in life long learning as an adult. So it is no surprise that for example in the U.S.A. high tuition fees exist and that about 5% of the 35–39 years old are enrolled in higher education programs. In Europe (EU-25) that latter figure is down to 1–2%, see European Commission 2006, table 3, p. 14). A wide gap between the U.S.A. and EU-25 in life long learning exists also for the 40–49 years old.

The emergence of the *knowledge economy* goes along with *increasing participation rates in tertiary education* and *intensified life long learning* (from "elite" to "mass" education). In advanced knowledge economies, participation rates in tertiary education may well exceed the level of 50% of an age cohort. Since they educate so many, universities need to care about the employability of their graduates.

Since knowledge plays an increasing role in the economy, with economy-wide spill-overs, education, especially higher education, is a *mixed good*, yielding private and social returns. The private returns on education justify economically that *tuition fees* are charged. Open issues are how high these fees should be and how far a system of stipends should reach the students. Countries in which tuition fees are paid demonstrate that charging fees will be accompanied by growing student consumerism.

Research and innovation become leading activities in knowledge economies, with basic research gaining relative importance; *research intensification* is not needed in all, but in some universities. This intensification will require, as U.S.A. examples show, that a comprehensive research university disposes of an annual budget of at least EUR 1 billion and organizes itself as an entrepreneurial university with well-defined strategies. Since the relative burden on the tax payer for financing higher education or research at universities will be reduced, new sources of revenues have to be found, influencing university missions and academic values.

2 The Globalization of Higher Education and Global University Rankings

In the next decade, the *globalization of higher education and research* will intensify due to the increased internationalization of the economies and due to the implementation of new technologies, especially in the field of the information and communication sector. New forms of global universities are already emerging: *open* universities stimulate education for masses of students without formal secondary school attainment; virtual universities, without much relying on physical infrastructure, reach out via internet; meta universities operate according to the MIT OpenCourseWare Initiative 1999 ("A transcendental, accessible, empowering, dynamic, communally constructed framework of open materials and platforms…" Charles M. Vest, 1999). Open universities, in particular, spread throughout the world: in Pakistan, the open university already counts 1.8 million students. Projects such as the Google Books Library Project (since December 2004) will, through the worldwide interconnectedness, reach more than 1 billion people.

Given these new vast opportunities of learning, higher education institutions will be increasingly confronted with the task of validating and branding knowledge.

To compete globally, universities need also a strong *regional base*. The areas in and around Boston or San Francisco, the rising regions around leading universities in Texas or Florida, as well as the European examples of Cambridge, Manchester or Barcelona demonstrate that universities should be part of a fast growing re-

gional clustering enhancing the culture and the impact of knowledge. The dynamics of innovation should have effects across all sectors, relying on modern infrastructure and being characterized by formal, but especially informal cooperation between universities, business and governments (Reichert, 2006).

In this regionally based climate of innovation, universities should switch from downstream strategies, which rely on exploiting existing knowledge, to *upstream strategies*. Upstream strategies consist in getting the best minds and the best infrastructure in targeted areas in which synergies between the university and other sectors of the region can be best achieved. Traditional, internally fragmented universities in Europe have difficulties in deciding on upstream strategies and in obtaining synergies through cooperation with other organisations. These universities tend to perpetuate existing structures and to oppose the reallocation of internal resources to targeted areas.

Not the systems of higher education in France, Germany or the U.K., but the *U.S. "hybrid system"*, with the old British college education as a base and competitive, structured Ph.D. programs on top, proved to be the most successful one in advancing the knowledge economy in the 20th century. The U.S. "hybrid system" allowed a massive expansion of student numbers ("massification"), research intensification within 250 to 300 research universities and the creation of a strong regional base for education and research activities. It thus paved the way for a diversification of universities with respect to missions and profiles. In the words of David Ward, the president of the American Council on Education: the U.S. system proved to be democratic at the base and elitist at the top.

This massification of the system and this diversification of missions and profiles of U.S. universities was not driven by any federal plan but by autonomous institutions, either public or private (non-profit or for-profit). The system evolved as a consequence of the competition amongst universities. This competition was enhanced by the mobility of students and staff, and by the establishment of

competitive funding by federal grant or research institutions (NSF, NIH). Contrary to the federal level, U.S. states do a lot of planning of their own (e.g. California, Wisconsin). This creates a second level of competition: there is a fierce "system competition" among states. If the universities in California, for example, fall behind in national rankings, the state of California will come up with reforms of its university system and, presumably, with more money.

In recent years, the "system competition" has intensified amongst states in the world. *Global university rankings* (Times Higher Education Supplement, Newsweek, Shanghai) demonstrate how well Anglo-American universities are performing. So far, Asian countries, especially China,

Korea and Singapore, have given high attention to this "global system competition" and are on the point of investing huge sums in their university system. India, for example, aims at increasing the number of universities from about 300 in the year 2005 to 1500 in the year 2015 (Times Higher Education Supplement, April 27, 2007).

Europe's reaction to the *rising importance of knowledge*, to the *globalisation* of higher education and research and to the *intensified "system competition"* amongst the states in the world is rather weak. An exception may be Germany's "Exzellenzinitiative". However, the European Commission (e.g. 2006, 2007) pointed out several times that actions are needed.

3 The European Reality

Many of Europe's universities rightly claim to belong to the oldest institutions in their countries; the oldest university in Europe, the University of Bologna, dates back to 1088. Since their foundation universities have always pursued a broad range of missions. They have prepared their students for employment, enhanced knowledge through research, contributed to the social underpinning of the economy and acted as cultural institutions, mainly through the humanities. This richness of history, missions and values of European universities is unparalleled in the world and contributes to the high global esteem the university system of Europe still possesses.

Yet, the recent emergence of knowledge economies and the trends towards the globalization of higher education and research have put doubts on the effectiveness of the European university system. Knowledge has become too relevant to leave its production, its preservation and its transfer only to the traditional ways in which European universities have been operating in the past.

The term *"mass university"*, used for describing many European universities, highlights the ambivalent effects the emergence of the knowledge economy has had on them: on one hand, universities have experienced an enormous growth of the size of their institutions since World War II, especially in terms of student numbers. But, on the other hand, due to political conditions and ministerial rigidities, elitist attitudes and inertia within the institutions, and, of course, due to a lack of funding, universities in almost all European countries failed to cope with this growth in a demand oriented way.

Europe has a fully-fledged system of higher education. The EU-27 counts, at least, the same number of higher education institutions as the U.S.A. (about 4,000 institutions). Just counting entries, Europe (EU-27) has about as many institutions as the U.S.A. in the top 200 or top 500 of the university ranking lists. There are about 1,000 Ph.D. granting institutions (universities) in Europe. In the U.S.A., there is almost the same number. However, good doctoral programs and good basic research are definitely more concentrated in the U.S.A. than in EU-25.

Although Europe seems to be similar to the U.S.A., the main difference is that Europe's universities still operate mostly in *nationally fragmented systems*. Many of them are still subject to the micromanagement by national ministries and lack clear gov-

ernance structures, a prerequisite for enabling them to become agents of change in more and more dynamic and open societies. Universities in Europe do not yet benefit from scale effects which a European area of higher education and research could easily provide. Universities are still mostly seen as institutions of a nation state only, not as institutions which have to reach beyond national borders and which have to excel in higher education and research at the global or, at least, European level.

Too many universities in Europe still follow the same "Humboldtian" idea of a comprehensive university, with a predetermined spectrum of subjects and with research done for its own sake only. A lack of diversification of missions and profiles is a consequence, often followed by illusions about the quality of their services. These illusions are made possible because universities in Europe are not forced to look beyond their nation states, and nation states, in general, avoid international comparisons of their universities, because those comparisons may trigger requests for reform and for more funding.

The *performance* of universities in Europe does not match the performance of U.S. universities. In the U.S.A., e.g., gross enrolment rates (all students irrespective of age as a percentage of the population in age group 20–24) reach 81%, compared to only 57% in the European Union, (European Commission, 2006, p. 13). The high U.S. number is a consequence of the high percentage of people studying within the age group 20–24, but also of the relatively high participation rates in life long learning beyond the age 24. Europe, on average, should have 40% more students than it has now.

With respect to employability, the unemployment rate of the population aged 25–29 with tertiary education attainment is 8.5% in EU-25, but only 2.6% in the U.S.A., (European Commission, 2006, p. 13). This unemployment rate in Europe, however, is of different size regionally. Especially in France and Italy, for example, unemployment rates are well above the European average.

All in all there is an economic puzzle Europeans should think about:

Although in the U.S.A. higher proportions of the population study, unemployment rates of graduates are lower and graduates receive higher premiums on tertiary education. Hence the puzzle: In the U.S.A., the supply of graduates is relatively higher than in Europe, yet they are less unemployed and enjoy higher premiums on tertiary education attainment. So what went wrong in Europe?

Europe disposes of a broad research base, yet peak performance is too weak. For example in *mathematics*, a subject not relying on costly infrastructure and not dependent on native languages, the research performance of Europe clearly falls behind the one in the U.S.A. Out of the 300 most highly cited researchers in mathematics (ISI, 2007) about two-thirds

are affiliated with U.S. universities. Only 6–7% come from France, 6% from the U.K. and only 2.3% from Germany. About half of the U.S. top researchers in mathematics were born outside the U.S.A., proving the global attractiveness of the U.S. system, and leading to a brain drain for the rest of the world.

Similar results can be derived in the other fields of the sciences, e.g. molecular biology. In the social sciences or in economics the situation is not different.

4 The Europe of Knowledge: the European Higher Education Area and the European Research Area

As already stated, Europe's Universities still operate mostly in small national systems or sub-systems, which results in a lack of recognition of foreign degrees and in low levels of trans-national or trans-sectoral mobility of researchers and students. As a consequence, the creation of the Europe of Knowledge, comprising the European Higher Education Area (Bologna Process) and the European Research Area, is a goal which should be pursued with great efforts at the European level and which should bring first results by 2010. To improve their performance, European universities need the scale effects and the competitive pressures a Europe of Knowledge could provide.

In London, in May 2007, during the ministerial conference, all "Bologna" states and Europe's universities reaffirmed their commitment to the Bologna process. Universities are certainly cognisant that the Bologna Process has to reach beyond the introduction of a common study architecture in Europe. It requires a fundamental reconsideration of the curriculum in every discipline, to ensure a student-centred approach and the achievement of appropriate learning outcomes. Again and again, universities have urged governments to give them the autonomy to undertake the Bologna reforms appropriately. Since the Trend IV report of the European University Association (2005) it has become evident that the quality of reform activities correlates positively with the degree of institutional autonomy of universities.

The European Research Area is not yet a reality. On January 1, 2007, with the introduction of the 7th Framework Programme, the European Research Council (ERC) was launched. Universities warmly welcome the ERC, hoping that through the ERC a true European dimension with respect to research excellence in Europe might be reached. The European Research Area, however, should also include a trans-national labor market for researchers in Europe. The implementation of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers, adopted by the Commission in March 2005, and since then supported by many universities throughout Europe, is a first step into this direction. However, further steps are needed. The Green Paper by the European Commission (2007) relaunches the debate on further steps and provides new perspectives on the European Research Area. For 2008, the European Union intends to come up with a new action plan.

5 The Modernization Agenda for Universities

The British Prime Minister Tony Blair surprised his colleagues during the informal meeting of the European Council at Hampton Court, end of October 2005, when he stressed the importance of a modernized university system for a refocused Lisbon Strategy. The Commission reacted to the discussion at this meeting ("Hampton Court Follow-Up") by issuing, on May 10, 2006, with input from experts, a communication on "Delivering on the Modernisation Agenda for Universities: Education, Research and Innovation" (European Commission, 2006, 208 final).

Since the Hampton Court meeting in October 2005, the discussion of the *modernization* agenda has centered on the following points for *action*:

1. Break down the barriers surrounding European universities:

– There should be a major effort to achieve – by 2010 – the core Bologna reforms in all EU Member States.
– By 2010, at least one-third of all graduates at the Master's level and one-fifth of those at the first degree level should have spent at least one term/semester abroad.
– No applicant should have to wait longer than 2 or 3 months for a decision about qualification recognition.

2. Provide the appropriate skills and competences for the labor market:

– Member States should treat the preparation for the labor market (in terms of specific skills and transversal competencies) as an important – but never an exclusive – indicator of the quality of universities' performance. Employability should be defined by the ability of (nearly all) graduates to find an adequate job within six or nine months after graduation.

3. Reduce the funding gap and make funding more effective in education and research:

– Member States should adopt the target that by 2010 (as was announced in the Annual Progress Report in February 2006) or 2015 (as was officially communicated in May 2006) the *total* funding for a *modernized* higher education sector should not be less than 2% of GDP. They should also renew their commitment to raise their level of investment in research to 3% of GDP by 2010.
– With or without substantial tuition fees, Member States should nonetheless improve their current funding models by introducing more competitive schemes.

4. Create genuine autonomy and accountability for universities:

– Member States should draw up a framework of rules and policy objectives for the university sector as a whole.
– In this context, universities should possess the freedom and the responsibility to set their own missions, priorities and programs.
– Member States should build up and reward management and leadership capacities within universities.

5. Acknowledge and reward excellence at the highest level:
– All Member States should review their provision at postgraduate (master and doctorate) levels and the disciplines concerned.
– Financial support should be made available at a European level to develop excellence at graduate/ doctoral schools and networks meeting key criteria.
– Competition for research excellence through the European Research Council (ERC) should be strengthened.

6. Build up a more positive image of European universities in the world:
– Erasmus Mundus or Marie Curie Programs should enhance the attractiveness of the European higher education area globally.

Although the documents of the "Hampton Court Follow-Up" underline the main directions in which the modernization agenda should move forward, the meeting of the European Council in June 2006, under the Austrian EU presidency, hesitated to make clear commitments. It especially avoided any reference to the rule that at least 2 % of GDP should be spent on higher education. It only encourages Member States to foster modernization, restructuring and innovation as suggested by the Communication of the Commission in its communication of May 10, 2006. The European council left open what role the Commission has in surveying progress in the process of achieving the modernization goals.

6 Universities as Strong Actors in the Knowledge-Based Society

Given the Bologna Process, the discussion on relaunching the European Research Area and the increased awareness of modernizing the university system, Europe seems to be on the right way. Yet, most of the work still needs to be done. What should come about quickly is to empower universities to escape the shadows of national bureaucracies. In many EU Member States, governments still decide on details of running a university. Universities should be a*utonomous institutions*, legally *and* actually, accountable to the general public only. Universities should quickly become strong actors in the field of higher education and research, with good institutional strategies. Universities should overcome their internal fragmentation and should not just be conglomerations of departments, of faculties or of study programs.

The institutional autonomy of universities is needed because the world of knowledge has to be organized similarly to advanced economies: the decisions about the supply of goods and services are left to agents (firms) who compete or cooperate and who only have to comply with predetermined rules set by law and governments. Public accountability and systems of quality assessment ensure that the performance delivered by the universities to society becomes

sufficiently transparent and can be evaluated. Competition amongst universities will enhance the diversification of missions and profiles and will lead to a contest in reputation, manifesting itself by attracting public awareness, brains and money.

Autonomous universities would also be a driving force to gain from the positive scale effects a Europe of Knowledge could provide.

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Kamingespräch – Evening Discussion

Ladies and Gentlemen, it is a pleasure to be here. Thank you, Mr. Governor, for this introduction. In order to simulate the "fireside chat", I placed the candle on this desk. Why is there a candle? The truth is, the Governor is a heavy smoker and needs it for lighting his cigarette.

Ladies and Gentlemen, it is a pleasure to be at the 35th Economics Conference of the Oesterreichische Nationalbank. This conference is a good and old tradition: I am not quite sure, but I think I attended it when I was an assistant in economics at the University of Linz long years ago. It is a very important conference. It takes place in a situation where the world economiy is in excellent shape. We have forecasts from various institutions, the IMF, OECD, the EU Commission, that the world economy is expected to be in very good and a very stable shape also for the next months and years. The important question is: Is it months or is it years? For us politicians, it is important to be aware that this very positive situation also carries risks for which we have to be prepared. One of the risks we are facing are the global imbalances in foreign currency reserves. There is also the risk of where raw material and world energy prices will go, and what influence these prices will have on inflation. We have also to be aware of the risks of asset bubbles in some countries. It seems to me that we do not yet see very clearly what the effects of climate change and of our ageing society will have on these forecasts.

On balance, we have to be optimistic on the one hand, but we have to be realistic and cautious on the other hand. This is key for politicians, it is key for researchers and it is key for the economic sector as a whole.

The Austrian economy is also in a very strong position. Last year our economy grew by 3.2%, for this year 3% are expected. At the moment, we are having high job creation. For this year we expect more than 1.8% more jobs. We have a very stable situation with an inflation rate expected to grow by 1.9%. We have an absolutely positive development when we talk about the labour market, especially the unemployment rate. We expect in Austria an unemployment rate of 4.1%, 4.2% this year and also next year. There are some regions in Austria where the discussion is not about unemployment, on the contrary. When we talk to entrepreneurs, they say: "We have a problem on the labour market, because it is a really enormous problem to find well educated labour." This means that full employment is the reality in some regions of Austria.

This very positive development is due to a number of reasons. First of all, Austria is benefiting from the high present and expected growth of our neighbouring countries, not only the new Member States of the European Union, but also the very strong and positive development in Germany. Second, there is a much greater flexibility in our economy and also of the entrepreneurs, as a result of our reform efforts during the past years. It is a clear target of the present government that we have to continue these reforms, because reform is the basis of success. This brings us the confidence of national and international economic actors in prudent fiscal policy in ongoing reform efforts in administration, labour market adjust-

ment, investment in human capital and physical infrastructure.

My message is quite clear. Austria, Austrian politics and the Austrian economy will remain on track for years to come, on the track that we laid during the last years.

There are three main pillars supporting the policy of the government. I will highlight some of the important questions pertaining to these three pillars. First, a balanced budget, which is key for the future. Second, investment, future investments in aspects like education, R&D and,

third, the continuation of structural reforms.

Let me talk about the Austrian government's policy mix. The target with respect to budget consolidation is to reach a balanced budget by 2010. Let me repeat the simple truth that good economic times are sometimes the most difficult times for Ministers of Finance. Thus, the real challenge in order to achieve this target at the latest by 2010 is that we have to point out very clearly that additional revenues will be only used for reducing deficits and debts. This is my clear message to all participants in the political discussion, because I hear many ideas for new expenditures. But the truth is that revenues are running with the growth rates, but expenditures do not. For us this means clearly that expenditure growth must be below GDP growth. I say this also loud and clear, again and again to my colleagues in the government: "If there is additional revenue, and there is additional revenue, frankly speaking, then it will be used for reducing deficits and reducing debts." When we talk about budgets I see two main aspects. I plan to introduce a multi-year budget planning, based on new legislation. This will include the expenditure ceilings as an essential element. It will include the introduction of output- and outcome-based budgeting. We all know that at the end of the day it is not the amount of money you spend on a specific area, but its effectiveness and outcome that count. Therefore, I want to establish this new regulation, this new legislation as a framework for this strategic target. For Austria, this is something of a revolution. It is a revolution in sense that it gives us a jointly agreed framework for the federal budget; it leaves more leeway for the Ministries, of course, how to spend their budget appropriation. It is quite a clear framework for government expenditures and it gives the Ministry of Finance more possibilities for controlling. It is a new approach to budgeting, a multi-annual approach, which involves more responsibilities and more leeway for the Ministries, but also for the Ministry of Finance. I would like to achieve this revolution during this year, to have a decision in Parliament on this new legislation before the end of the year.

In addition, we have to make substantial progress on constitutional and administrative reform to ensure that our appreciated federal system can meet the challenges, not least

with the view to improve the effectiveness of public expenditure. We will attempt to come to clearer and more transparent and functional fiscal relations with the other levels of government, the "federal provinces" (Bundesländer) and the local authorities. We aim to better align spending and revenue decisions, to eliminate overlaps and parallelism, to achieve transparency as well as the joint responsibility of all regional layers for the overall budgetary outcome. I decided today that we will start these negotiations earlier than expected, i.e. in July of this year. And I say very frankly: It is, I think, one of the most difficult questions that the Minister of Finance can face in Austria. It is not a question of the party-political composition of the government. When we talk to our friends in the federal provinces, it's not a question of political parties. It is still and strictly a question of interest. And the major question is how much money can especially the federal provinces spend effectively. There is one major problem which lies behind this question. When they talk about their budgets they are responsible for revenues which cover only 1.5% of their total budget. And for providing 98.5% of the budget the federal level is responsible. I am convinced that this is a situation which does not meet the challenges of the future. Thus, we have the question of what is the basis for taxation also at the level of the federal provinces. I know, it is very difficult to talk about that, but it is absolutely necessary. That means, talking about budgets, there are two real challenges. The first is, as I mentioned, the new legislation, the framework for our strategy, and the second is the negotiation with the federal provinces and the local authorities to build up a new fiscal federalism. In German we call this "Finanzausgleich".

The second pillar is investment into the future. There are two different types of investments. The first is in the physical infrastructure and the other, which is as important or more important, is investment in people and in their protection from existential risks. Competition for domestic and international investment remains high in times of globalisation. Therefore, we must continually upgrade Austria as a business location and as a desirable place to live in order to maintain and enhance the living standard of our people. We will re-evaluate and restructure our social protection system which we see – despite being completely conscious that here we have a different point of view to other European countries – as an important productive force. When people are secure from the existential risks of poverty, illness, unemployment and old age, they can devote all their creativity and innovative spirit to their work. This will enhance both their satisfaction in the work place as well as the economy as a whole because of higher productivity growth. There is a discussion between different institutions on this. I had a discussion with Joaquin Almunia, the EU Commissioner in which we talked about our strategy for the next years. I remarked that it is necessary to engage in these investments in the future also in order to promote social cohesion of a society. At the same time, we will have to further improve the flexibility in the labour market, in order to ensure global competitive-

ness. Our social partners have also agreed recently on a package of measures for a better working time regulation. We are also looking at a higher rate of employee participation in the profits of the enterprises. Thus, our overall concept is flexicurity, which will offer more flexibility for the entrepreneurs and the right level of security for the employees.

We are aware that the whole education sector is key for the future competitiveness of the Austrian society and economy. I think this is one of the key issues we face when we talk about the future. For this reason, we are not only putting more money into the education system. We will also make changes to the structure, because, as I said before, it is not only the amount of money we spend that counts, it is also a question of effectiveness, of how the money is used. It is especially the education sector, where we have to have this structural discussion. This extends also to our constitutional reform with the federal partners, with the federal provinces.

When we talk about education we also have to face the real problems in schools. The Austrian discussion is often superficial: the discussion on education reform revolves around the question of what is the name of the structure, what is the name of the system, what is the name of the school. When you discuss this topic with teachers or parents, you get totally different questions. You have to answer questions like: how to deal with new challenges, how to "build" human beings, how to go beyond just giving information, cognitive information. So, the question is: Are our teachers ready to do that? Is the education of the teachers in the best shape? And those are questions we have to discuss when we talk about the question of the education system. We must go deeper than the headline. This is what I expect from the participants in this discussion on the future of education, these are the important questions for the future of our kids. Sometimes, it is my impression that it is not the needs of the children and the young people which are at the centre of the discussions, sometimes it is the needs of the system and of the participants of the system. That is wrong. Therefore, I am very interested to go into the details and also to go into the deep problems, into the real problems when we talk about education reform.

The third pillar I mentioned is structural reforms. Frankly speaking, structural reforms is the never-ending story, is the never-ending task. Each country must keep running in order to maintain its place in international rankings. This is also true of Austria. We have to learn from best practices in European and other countries. We still have a way to go in a number of fields where international developments require us to adjust and adapt. And there is no sector exempt from the need of further structural reform. We need reform in public administration, we need reform to foster entrepreneurship, we need reform, as I mentioned, in education, in research and development, in all the sectors. There is no sector sheltered from reform requirements. There is no sector we can set aside when we talk about structural reform. Why is this important?

It is important that Austria as a country learns to take up the challenges of a competitive globalised

market. But these structural reforms are necessary also because we have high expectations that these efforts will enable us to return money to the tax payers. Thus, it is the clear target of this government, and it is also my target, that we implement a tax reform in the year 2010. But first we have to earn this money. And therefore, I never give an answer to the question of how much relief the tax reform will bring, because we have to earn this money first. I will not stand for a tax reduction which deflects us from our path of prudent fiscal policy. As I mentioned, we have our strategic target of budget reform, but also one of tax reduction. But tax reform must not endanger our target of positive growth development in the future, and thus of prudent budgetary policy. Why do I point this out? Just as during good economic times there are a lot of ideas for new expenditures, but there are also a lot of ideas of reducing taxes already now. And I say: "*No*, this is not the right way to go." We must keep track and stick to our agreed targets, even if there is a public debate.

These three pillars give some orientation on how we try and how we handle our political targets during the next four years, in order to keep the Austrian economy strong, to do whatever we can do to keep growth strong. High growth rates are the basis for decreasing unemployment. Full employment is our target because we think that it is the best answer for all social needs and social problems. Other politics are second best. This is the reason, why we keep on track. The Austrian economy has achieved remarkable success from globalisation so far. Austrian citizens tend to underestimate their economy's and society's success, in spite of their achievements. We are one of the most beautiful, one of the most successful, most peaceful, most cohesive societies in the world. And it is my and this government's political objective to extend this success story into the future. Above I outlined some of our instruments and the framework within which we make our political decisions. Sometimes we are criticized, that is okay, sometimes we are supported, and that is also okay. Thank you for having the possibility to deliver this statement.

35. Volkswirtschaftliche Tagung 2007

















35TH Economics Conference 2007












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The Federal Reserve System's Role in Economic and Financial Literacy – Rationale, Activities, and Impact

Abstract

This paper provides an overview of the economic and financial education efforts of the Federal Reserve System. We discuss a number of financial education programs and resources, and we touch on a number of evaluative efforts that document the impacts of these initiatives in terms of increased knowledge and improved financial management behaviors, at least at the household level. We also share some abstracts of financial education research and impact studies conducted by Federal Reserve staff. These data hint at the potential relationships between financial education and community involvement and give us some hope that financial education programs really are making a difference in communities, and that we will some day be able to document those differences more robustly.

Educating people about their personal finances is like dropping a rock into a lake or pond – the ripples extend outward with wider and wider effects. Well-informed, well-educated, economically and financially literate consumers can create economic ripples. They make better financial decisions for themselves and their families, increasing their economic security and well being. They are in a position to obtain better jobs and create a desirable pool of labor for employers. Secure families are more involved in their communities as home owners, tax payers, and voters. They are more involved as parents with their children's teachers and schools, enabling better educational and economic outcomes for their children. They contribute to vital, thriving communities, further fostering community economic development. Thus, being economically and financially literate is not only important to the individual household and family, it is also important to communities and societies.

Over the last several years, the issues of economic and financial literacy and education have risen on the agenda of educators, community groups, businesses, government agencies, organizations, and policy makers (Government Accountability Office, 2004; International Monetary Fund, 2005; OECD, 2005; OECD, 2006). Increasingly over the last few years there has been a steady stream of articles and news reports highlighting efforts to provide financial education to consumers. A quick survey of press releases in the U.S.A. reveals more than 420 releases on financial and economic education in 2006. The majority of these focused on financial education for youth, teenagers, and young adults.

The topic has also attracted the university research community. Since the mid-1990's there has been a great deal of research on the issue of financial education, either from a policy perspective (Bayer, Bernheim and Scholz, 1996; Bernheim, 1998; Braunstein and Welch, 2002; Caskey, 2001; Fox, Bartholomae and Lee, 2005) or a pragmatic perspective (Bowen, 1996; Garman, 1998; Hogarth and Swanson, 1993; Lusardi, 2005; Montalto, 2000; Perry and Ards,

2001; Rand, 2004; Toussaint-Comeau and Rhine, 2000). In October 2006, Boston University and the Federal Reserve Bank of Boston co-sponsored a conference on the future of life-cycle saving and investing that featured research on personal finance (see Boston University, 2006) and Dartmouth and NBER sponsored a conference on personal finance education concurrent with this OeNB conference.

The goal of this paper is to present an overview of the economic and financial education efforts of the Federal Reserve System. In the process we will look at why the Federal Reserve is involved in these efforts, what activities the Federal Reserve has undertaken as part of these efforts, what evidence we have of impact and outcomes, and what challenges we face in the years ahead.

1 Rationale

An effective and efficient marketplace requires knowledgeable consumers, able to make informed choices. In classical Adam Smith economics, informed consumers provide the checks and balances that keep unscrupulous sellers out of the market. For example, if all consumers had "complete information" about mortgages, predatory lenders would not be able to gain a foothold in the marketplace and negative amortization and payment shock would not be problems for consumers. And, as Ben Bernanke has said, financial literacy is important "both as a source of better decision making by consumers and as a means of improving the functioning of financial markets" (Bernanke, 2006).

Beyond economic efficiencies, the financial marketplace of the 21st century has become more complex. Alan Greenspan noted that "As market forces continue to expand the range of providers of financial services, consumers will have much more choice and flexibility in how they manage their financial matters. They will also need to accumulate the appropriate knowledge on how to use new technologies and on how to make financial decisions in an informed manner" (Greenspan, 2001).

Take the simple task of opening a bank account. Thirty years ago, you could walk into your home town bank; the tellers and the bank manager knew your name; the product choice was simple; and the bank was on the corner. Today, the bank may still be on the corner, but it is just as likely to be on the Internet; the product choice is much more diverse; and with mergers and acquisitions, the staff may not know you at all. The same holds true for many other products and services – mortgages (that include all permutations of terms and interest rates), home equity loans and lines of credit (products that did not exist 25 years ago), credit cards that come with multiple interest rates and several kinds of fees, and a broad range of investment choices – the list could go on. Information and the ability to decipher and use that information in decision making becomes more necessary as financial products and services continue to expand and as new delivery channels for financial services develop. Even the most financially savvy consumers may have problems keeping up with product development and new delivery channels to make wise choices.

Technology also has transformed the financial marketplace, enabling

an increased variety of products, services, providers, and delivery channels. Lenders can collect and process data with sophisticated credit-scoring models to evaluate and price risk more efficiently and make lending decisions more quickly. This in combination with increased securitization of loan portfolios has enabled lenders to extend credit more broadly than in the past, expanding the audience for financial products and, coincidentally, the need for financial education.

This expanding array of products and delivery channels increases the challenge to agencies and organizations charged with consumer protection – and one of the Federal Reserve System's core missions is consumer protection. The Federal Reserve approaches consumer protection through both regulation and education, the theory being that well-educated consumers are in a good position to protect themselves.

Furthermore, over the past 20-plus years there has been a shifting of responsibility for long-term well being away from institutions (employers and the government) to individuals. For example, in 1980, 70% of pension plans were defined contribution (as opposed to defined benefit plans; Conte 1998). By 2004, 93% of plans were defined contribution (U.S. Department of Labor, 2004). In 1980, one-third of workers were covered by defined contribution plans; by 2004, three-fifths (61%) were covered by such plans (Conte, 1998; U.S. Department of Labor, 2004).

Demographics are also a driving force behind the need for financial education. A growing cohort of aging baby boomers will be more responsible for their own retirement income security. As they begin to dissave, national saving rates are likely to decline. Furthermore, these consumers may become targets for questionable or outright fraudulent annuitization schemes. Youth are coming to financial independence with limited role models and experiences. The Jump$tart Coalition for Personal Financial Literacy conducts bi-annual financial literacy tests of high school seniors. In 2006, students answered 52.4% correctly, an increase from 52.3% in 2004, but down from the

56.9% in 1997 (Jump$tart, 2006). Another demographic trend is changing immigration patterns – immigrant groups need to learn to manage in the marketplace of their newly-adopted countries. All of these trends have implications for our financial literacy efforts.

Macroeconomic conditions also provide an impetus for financial education. In a 2005 report on the federal government's role in improving financial literacy, the Comptroller General of the U.S.A. stated: "Finally, I believe that a clear understanding of the country's overall financial condition and future fiscal outlook is an indispensable part of true financial literacy. The financial futures of the American people are shaped not only by their own

personal planning and individual investments but also by the fiscal choices made in Washington… Due to current demographic trends, rising health care costs, and other factors, we face the possibility of decades of mounting deficits, which left unchecked will threaten our economic and national security, while also adversely affecting the quality of life and opportunities available to future generations. Americans must be aware of these developments in planning for their own financial futures, since, for example, we can no longer assume that current federal entitlement programs will continue indefinitely in their present form." (Government Accountabilty Office, 2005. p. 2)

A final rationale for encouraging economic and financial education is the community reinvestment and economic development responsibility within the Federal Reserve System and among financial institutions. The Community Reinvestment Act (CRA) is intended to encourage depository institutions to help meet the credit needs of the communities in which they operate, including low- and moderate-income neighborhoods. It was enacted by the Congress in 1977 and revised in 1995. Through its Community Affairs program, the Federal Reserve System engages in outreach, educational, and technical assistance activities to help financial institutions, community-based organizations, government entities, and the public understand and address financial services issues affecting low- and moderate-income persons and communities. Financial education fits in well with the Federal Reserve System's CRA responsibilities.

Any one of these rationales could be reason enough for the Federal Reserve System to be engaged in economic and financial education – taken together they present a compelling argument for our involvement.

2 Activities

2.1 General Financial Education Activities

In the 1990s, it would have been relatively easy to provide a list of financial education initiatives in the U.S.A.; in 2007, new programs and players are added on a daily basis and it is virtually impossible to maintain a listing of current initiatives. There seems to be an abundance of activity on the financial literacy front. Some researchers (Vitt et al., 2000 and 2005; Jacob et al., 2000) have surveyed a variety of educational community-based organizations to determine the availability and extent of initiatives. In 2000, Vitt identified 91 programs offered by schools, Cooperative Extension programs, colleges (including community colleges), the military, faith-based organizations, community groups, employers and others. Jacob et al. (2000) catalogued school and Cooperative Extension programs as well as those offered by credit counseling agencies, employers, and financial institutions, with a special focus on programs targeted to low-income audiences.

Keeping up with the volume of materials in the area of economic and financial literacy is equally daunting. The Jump$tart Coalition has over 675 resources in its financial education database. The National Endowment for Financial Education lists over 150 educational resources and curricula from a wide range of

agencies, organizations, and firms in its Economic Independence Clearinghouse database and many more in its "Smart About Money" site; many of these materials are available in multiple languages. The website *www.mymoney.gov* lists nearly 220 federal government and related partner publications on various personal finance topics.

Legislative and public policy initiatives are also driving the development of financial literacy efforts. Financial education is an important part of Individual Development Accounts (IDAs), a policy initiative launched in the late 1990s to help low-income households build assets. The Savings Are Vital for Everyone's Retirement (SAVER) Act included a substantial retirement savings education program (Saving Matters) as part of this policy (U.S. Department of Labor, 2000). For the transition to an "all-electronic Treasury," the U.S. Department of the Treasury included a consumer education program in their "EFT'99" initiative (U.S. Department of the Treasury, 2000). Although not required by welfare reform legislation (the 1996 Personal Responsibility and Work Opportunity Act), most welfare-to-work programs include some money management information as part of participant training; New Hampshire's Lifeskills for Employment, Achievement and Purpose (LEAP) initiative is one example (University of New Hampshire Cooperative Extension, 2004).

Title 5 of the Fair and Accurate Credit Transactions (FACT) Act created the Financial Literacy and Education Commission, including 20 federal-level government agencies with some involvement in financial education. The commission was charged with developing a web portal for financial education resources (www.mymoney.gov), supporting a toll-free hotline that links consumers to financial education resources (1-888-mymoney), and developing a national strategy to help educate and inform consumers about financial management matters (www.mymoney.gov/pdfs/ownership.pdf).

Most financial literacy initiatives have very specific target audiences. But just as there are numerous initiatives, so too are there numerous target audiences. Youth, military personnel (especially young, enlisted personnel), low-income families, first-time homebuyers, employees, church members, and women are all targets of one program or another. Welfare-to-work programs have also incorporated financial education. There are programs targeted to various ethnic groups (for example, initiatives for Native Americans), various situational groups (including prerelease prisoners), and various demographic groups (such as new parents or pre-retirees). The National Endowment for Financial Education (NEFE) has collaborated with nearly 70 national nonprofit organizations to create publications for separate, unique constituencies (NEFE, 2007). In essence, it would be difficult for a U.S. consumer not to be part of a target audience for at least one financial literacy initiative. However, there are a few target audiences that bear special mention.

Because home ownership is both a major investment and a major asset for families, first-time homebuyers are a key audience for many financial literacy programs. These initiatives

often target low- to moderate-income families (see, for example, Neighborworks, 2007; National Community Reinvestment Coalition – NCRC, 2007). Some programs cover both pre-purchase and post-purchase topics, working with families over several years to clean up their credit records, find affordable housing, and prevent delinquency and default (see, for example, Fannie Mae, 2007; Freddie Mac, 2007).

As is evident from some of the survey data, youth also are an important audience for financial literacy initiatives. Clearly, the advantage to educating youth is that they then grow up into financially literate adults. The Jump$tart Coalition for Personal Financial Literacy, a broad-based coalition of nearly 190 agencies, organizations, and firms, is "dedicated to improving the financial literacy of kindergarten through college-age youth by providing advocacy, research, standards and educational resources. Jump$tart strives to prepare youth for life-long successful financial decision-making." (Jump$tart, 2007).

A program housed within the Federal Deposit Insurance Corporation, Money Smart, seeks to "help adults outside the financial mainstream enhance their money skills and create positive banking relationships," (Money Smart, 2006). The goal of the program is to provide financial stability for individuals and families as well as communities.

While most literacy initiatives function in a preventive mode (i.e., trying to prevent people from getting into problems), some offer curative programs for consumers with credit problems (NFCC, 2007; InCharge, 2004). For many, this is a highly teachable moment in their financial lives. The 2005 Bankruptcy Abuse Prevention and Consumer Protection Act (Public Law No. 109-8) requires counseling prior to filing for bankruptcy and provides for debtor education as condition for final discharge from bankruptcy. Generally, these programs start off with a counseling format, customized to the consumers' needs; but most organizations involved in credit counseling also offer basic financial education.

2.2 The Federal Reserve System's Financial Education Activities

Federal Reserve activities are designed to avoid duplication of efforts and make use of our comparative advantages to complement other financial education efforts. The Board and the Reserve Banks are active in (1) increasing access to information about financial products and services, (2) promoting awareness of the importance of financial education and building capacity to conduct financial education, (3) collaborating with educational and community organizations to provide financial education resources, and (4) promoting research and identifying best practices for financial education (Bernanke, 2006). A sampling of specific Federal Reserve initiatives is included in an appendix to this paper.

2.2.1 Increasing Access to Financial Information

Many of the consumer protection laws in the U.S. include disclosure requirements for consumers. Thus, when consumers shop for a credit card, consumer loan, mortgage or savings product, financial institutions

must provide some information about interest rates, fees, and other product features. However, we know a couple of things about this information – it can be a challenge to make the information clear to consumers, and sometimes the required disclosures are not everything a consumer needs to know about the particular product or service.

Effective disclosures need to be easy to read (for example, in a readable font and format), clear and understandable, and allow consumers to make comparisons or otherwise act on the information included. Since 1996, the Federal Reserve Board has conducted consumer focus groups to help us improve disclosures and provide consumers with the information they need and want. More recently, the Board has expanded consumer testing by conducting cognitive interviews and usability testing for projects on privacy notices (see www.ftc.gov/privacy/privacyinitiatives/financial_rule_inrp.html) and credit card disclosures (see www.federalreserve.gov/boarddocs/press/bcreg/2007/20070523/default.htm).

The Board and the Reserve Banks also provide consumer information, in print and on the web, that complements the information consumers find in disclosures (see www.federalreserve.gov/consumers.htm). These materials enable consumers to go into more depth on the particular features of a credit card or mortgage and allow them to process the information in the disclosures so that they can better apply it in their decision making. These materials are often produced in cooperation with other federal agencies; all are tested with consumers and community educators. Community-based educators and financial counselors appreciate the high-quality, unbiased information in the Federal Reserve's materials.

2.2.2 Promoting Awareness of Financial Education and Building Capacity

The Chairman of the Federal Reserve has been willing to speak on the importance of financial education, and his words carry weight in many circles. Both Chairman Bernanke and Chairman Greenspan have spoken and testified on financial education efforts and have participated in financial education classes in the Washington DC school system, including April 2007's Financial Literacy Month activities (Bernanke, 2007). The fact that the Board supports financial education throughout the organization sends an important signal to the financial services community as well as to educators.

In 2003, the Federal Reserve System sponsored a national campaign to call attention to the value of personal financial education and the wide variety of financial literacy tools and resources available. This multi-media initiative, entitled "There's a Lot to Learn about Money," included a public service announcement and a toll-free number for obtaining financial education resources. The Federal Reserve System also hosts an economic and financial education website, www.federalreserveeducation.org. The site includes materials for teachers, students, and consumers and links to a wide variety of financial education resources at the national, regional, and local levels.

Beyond merely promoting awareness of the importance of financial education, the Federal Reserve Sys-

tem also works to build the capacity of others to conduct economic and financial education. Across the System, Federal Reserve Banks host training sessions for teachers from a variety of disciplines, including social sciences, math, and consumer sciences. To promote economic literacy more broadly among the general public, the Minneapolis Reserve Bank hosts an annual training session, "Supply, Demand, and Deadlines," a workshop on economics for newspaper reporters and writers to help them more effectively communicate economic and financial information. Federal Reserve Community Affairs staff also conduct training for community educators to help them in their work with low- to moderate-income families.

2.2.3 Collaborating with Educational and Community Organizations

The Federal Reserve recognizes the synergies that result from strategic partnerships with other agencies and organizations. Staff members from the Federal Reserve Board advise and assist national organizations such as the Jump$tart Coalition for Personal Financial Literacy, the Conference of Mayors' DollarWi$e Campaign, Operation HOPE, the American Savings Education Council, the FINRA Investor Education Foundation, and America Saves on the development of policies, programs, materials, and partnerships. The Federal Reserve Board also participates in the federal government's Financial Literacy and Education Commission.

The Federal Reserve Banks have joined with regional organizations to address financial education needs in their local communities. For example, the Federal Reserve Bank of Chicago sponsors their annual "MoneySmart Week," partnering with banks, businesses, government agencies, schools, community organizations, and libraries to host activities designed to help consumers learn how to manage money. The Federal Reserve Banks of San Francisco and Minneapolis have worked with leaders in the Native American community to develop financial education materials.

Schools are important partners for the Federal Reserve's education efforts. The Fed Challenge is an academic competition that offers high-school and college students the opportunity to learn more about how the Federal Reserve develops monetary policy and how those policies affect the economy. Federal Reserve Bank economists work with local teachers to develop a Fed Challenge team, which competes at local, regional, and national levels. Several Reserve Banks host essay contests for high school youth, designed to promote writing skills, encourage economic thinking, and help students apply economic concepts to the real world.

2.2.4 Promoting Research and Identifying Best Practices

It should come as no surprise that the Federal Reserve also conducts and promotes research relevant to financial education. The Federal Reserve Board's triennial Survey of Consumer Finances provides a wealth of data on U.S. families' assets, borrowing, retirement saving, and use of financial institutions (the data are available at www.federalreserve.gov/pubs/oss/oss2/scfindex.html). Many research-

ers and advocates use this data set to analyze conditions and trends in consumer finances and to seek to understand how consumer behaviors might relate to economic outcomes. The Federal Reserve System's biennial Community Affairs Research Conference also serves to encourage new research on financial education and community development topics (conference proceedings are available at www.federalreserve.gov/community.htm). The Federal Reserve Bank of Chicago maintains the Financial Education Research Center (www.chicagofed.org/cedric/financial_education_ research_center.cfm), which provides access to online resources for researchers, educators, and program developers.

Box 1

Unlocking the Risk-Based Pricing Puzzle:

Five Keys to Cutting Credit Card Costs

The purpose of this research was to examine the extent to which risk-based prices (measured as APRs) are correlated with risky behaviors. We focus our discussion on those who carry over a balance from month to month, because the conventional wisdom is that individuals who only use their credit card for transactional purposes focus less on their APR than on other features. The APR affects those with a balance as they must pay the interest on their outstanding balance every month, and consequently, they stand to save more money by lowering their interest rates.

Controlling for risk measures, few demographic and socioeconomic variables had an association with the interest rate. And while some of these characteristics may be associated with the interest rate, it is difficult to make recommendations to consumers about things that they cannot control, nor do we want to tell consumers to completely change their lives.

Top 5 Things Consumers Could Do to Lower Their Credit Card Interest Rate

Five behaviors had a significant affect on the interest rate. To illustrate potential savings we use examples based on the median balance revolved (USD 2,380) and the "intercept" interest rate of 17.0%. We assume that consumers do not charge any more to their credit card, that a single interest rate applies to the full balance, the rate does not change during the payoff period, there are no additional fees or penalties, and consumers pay all of the finance charges plus 3% of the balance with a minimum total payment of USD 20. At the baseline, this "Sample Consumer" would end up paying USD 1,774.91 in interest over the life of the debt as they pay down the balance to zero.

Behaviors that Lower Rates and Save Money[1]

	Rate in %	Interest Paid in USD	Potential Savings in USD
Base	17.00	1,774.91	–
Pay on time	15.23	1,461.90	313.01
Decrease utilization by 10%	12.37	1,089.81	685.10
Increase risk tolerance to substantial	15.06	1,434.48	340.43
Shop more	15.09	1,439.27	333.64

[1] *Assumptions: Balance = USD 2,380, completely paid off, consumers do not add to the balance*
Single interest rate applies to the full balance, no interest rate changes during payoff period
No additional fees or penalties
Payments = all finance charges + 3% of balance

1. Pay Bills On Time: *As part of the credit card industry's "penalty" interest rate system, missing a payment could cause the card issuer to increase the consumer's interest rate to the higher penalty rate. In our model, consumers who pay their bills on time would have lower interest rates by 177 basis points.*

If our Sample Consumer cleans up their credit record and never has a late payment, their interest rate would be 15.23%, resulting in a saving of USD 313.01 in interest over the base group.

2. Decrease Credit Utilization: *Credit utilization is the ratio between the credit card balance and the credit limit. To cut this rate, the consumer would have to decrease the credit card balance. If they reduce the balance, they save money in two ways − they decrease their credit card interest rate and this lower rate gets applied to the smaller balance, resulting in lower interest costs. The utilization rate is a percentage (for example, if the credit limit is USD 1,000 and the balance is USD 500, the utilization rate is 50%); lowering the rate by 1% (in our example, from 50% to 49%) was associated with a 43 basis point reduction in the interest rate.*

If our Sample Consumer reduced their credit utilization ratio by 10 percentage points, they could reduce their interest rate by 433 basis points to 12.67% from 17.00%, paying USD 1089.81 in interest, a savings of USD 685.10.

3. Become More Financially Educated: *Becoming financially educated increases consumer confidence and ultimately helps consumers actively manage their credit. Although we do not have a variable that directly measures financial education, the amount of risk consumers are willing to take can be a proxy for financial sophistication. An improved understanding of financial products, including stocks, bonds, and credit products allows consumers to conduct more sophisticated financial transactions − and they may be able to take on more informed risk. Additionally, consumers with more financial education may be able to make better choices among credit card offers as they are better able to recognize the bad ones. By being willing to take on more risk, consumers could find rates that are 194 basis points lower.*

If our Sample Consumer was able to tolerate substantial risk, they could reduce their interest rate from 17.00% to 15.06% and pay USD 1434.48 in interest, saving them USD 340.43.

4. Shop More For Credit: *The proliferation of credit cards has increased competition between card companies; shopping for credit allows consumers to tap into this competition. Our model predicts that increasing the amount of shopping is associated with a decrease in the interest rate. When consumers do more comparison shopping, they are more likely to find a lower interest rate − our model predicts a 191 basis point reduction − and perhaps other card features that provide added benefits. With additional information, consumers would be able to make more informed decisions when choosing their credit card.*

If our Sample Consumer had conducted more research to choose their credit card, they could reduce their interest rate by 191 basis points to 15.09% would pay USD 1,439.27 in interest, saving USD 335.64.

5. Pay Off the Credit Card Balance: *Depending upon the amount of the balance carried, it is understandable that consumers may not be able to pay off the entire balance on their credit card. But they could start paying more each month to systematically reduce their balance. As this pattern continues, they could eventually gain the ability to pay off their entire balance monthly. Once this occurs, they could maintain this payment pattern. By implementing this behavior, they could reduce their interest rate by 104 to 161 basis points.*

A dollar saving for this behavioral change is difficult to calculate because of the compounding effects of paying down the credit card balance and the interest rate change. However, if the interest rate remained constant and the Sample Consumer paid off 4% of their balance, instead of 3%, the resulting interest would be USD 1,152.57, a savings of USD 622.34. And if the interest rate was reduced by 104 basis points they would save USD 190.36. Therefore, the approximate total potential savings would be USD 622.34 + USD 190.36 or USD 812.70.

Conclusion

Understandably, consumers cannot change all five behaviors at once, but if they start to make small adjustments these can eventually add up to hundreds of dollars saved in interest through lower interest rates. This process takes time, but the first step is to understand that consumers can affect their interest rates through their actions. Next, they need to actually make the changes that will reduce their interest rates. Lastly, consumers will need to be proactive in dealing with credit card companies and ask for lower interest rates.

Source: Hazembuller, Lombardi and Hogarth (2007).

The field of behavioral economics is closely connected with consumers' decision making and financial behaviors. The Federal Reserve Bank of Boston's Research Center for Behavioral Economics and Decision Making is currently evaluating a credit repair education program, available to taxpayers filing for the Earned Income Tax Credit at volunteer tax preparation sites where Reserve Bank staff offer their assistance. This study seeks a better understanding of the underlying determinants of credit problems and ways in which credit counseling can improve individuals' credit scores. Staff in the Division of Consumer and Community Affairs have collected and analyzed consumer data that link financial knowledge, experiences, and behaviors as well as the impacts of consumer behavior on risk-based pricing and consumer information search and financial decision making.

One of the key research questions in the field of financial education is "does it work?" That is, does financial education improve behaviors and outcomes for consumers? Toward this end, the Federal Reserve undertakes and promotes research that aims to increase our understanding of the financial education programs and delivery channels that work best. Board staff have collaborated with faculty from the University of Vermont to study the long-run impacts of financial education programs, not only on personal outcomes but also on community development outcomes. Board staff are also collaborating with the Department of Defense to conduct a longitudinal study of the effect of military-sponsored financial education on soldiers' financial behaviors. Staff from the Philadelphia Federal Reserve Bank are engaged in an evaluation of homeowner counseling programs and staff from the Kansas City Reserve Bank are involved in evaluating an employee education program.

3 Impacts

There are a number of ways to measure impact. The beginning of this paper outlined the possible outcomes of financial and economic education.

Thus, logical measures of impacts would reflect these outcomes: Are people making better financial decisions? Are they more economically secure? Has the labor pool expanded? Are households more engaged in their communities as home owners? Are the citizens are making better decisions as tax payers and voters? Are communities are vital and thriving? One is tempted to look at macro indicators – savings rates, bankruptcies, educational outcomes for youth – but many of these changes can take time, and longitudinal studies can be costly.

In the shorter-run, there are some other measures of impact that we can turn to – for example, increased awareness and visibility of financial education as an issue and increased funding for financial and economic education initiatives. And there is some evidence of these impacts.

3.1 Awareness and Visibility

When the Jump$tart Coalition was formed in 1995, three states had a mandated financial education component. By 2007, 21 states have passed laws requiring some form of financial education in the primary or secondary school curriculum. In addition, other states have added selected financial management skills to their standards of learning tests with a clear expectation that teachers will "teach to the test."

At the federal government level, financial education has also gained visibility. The 2003 FACT Act created the Financial Literacy and Education Commission, involving 20 federal agencies. The frequency of Congressional hearings on the topic has increased over the years, from virtually none in 2000 to several in the 2006–2007 time frame. And the topic is not just being discussed in the Banking and Financial Services Committees; it is also being addressed in the Oversight and in the Homeland Security and Governmental Affairs Committees. There is a House Caucus on Financial and Economic Literacy that has hosted an annual Financial Literacy Day on the Hill since 2005.

Organizations such as the Ford Foundation (Gwatkin and McCarthy, 2003) and the Urban Institute (Bell and Lerman, 2005; Lerman and Bell, 2006) have added financial education to their agendas. And advocacy groups, such as CFED (formerly the Center for Enterprise Development) and the New America Foundation have started to incorporate more financial education into their programs and plans.

As indicated earlier, in the 1990s it would have been fairly easy to catalogue the set of financial education resources and the private, public and not-for-profits sources that facilitated financial education. Today, it would be hard to find a bank, securities firm, insurance company, or other major financial services firm that does not provide some support for financial education. Likewise, the number of local, state, and regional agencies and organizations that have joined the cause has grown substantially.

3.2 Funding for Financial Education Initiatives

Awareness and visibility of an issue may be important, but without funding, initiatives can die on the vine. In the past, many other financial services firms have supported consumer

financial education. For example, in the early 1990's, ATandT Universal Card Services funded four years of credit education initiatives. Later on in that decade, American Express funded a number of financial education initiatives on credit education and assisted in creating a clearing house for financial education resources.

Across the years, funding for financial and economic education initiatives has increased substantially – for example:

- In 2003, the FINRA (formerly the National Association of Securities Dealers) Investor Education Foundation was established; it is currently funded by more than USD 50 million in settlement money from fines.
- In 2003, Take Charge America, a consumer debt-counseling organization, established a USD 10 million endowment for an Institute of Consumer Financial Education and Research at the University of Arizona.
- In 2004, Citigroup committed to providing USD 200 million in funding world-wide over 10 years, generally for grants to local groups conducting financial education.

However, measures of increased visibility, awareness, and funding are really only intervening measures and may not correlate directly with the ultimate impact we want from our financial education programs – that is, consumers and communities that are financially and economically secure.

3.3 Micro Studies of Educational Impacts

For a family, getting one's financial house in order can take time, and longitudinal studies to prove that a particular program is effective are costly to conduct. However, there have been some impact and evaluation studies that show that financial education can make a difference.

The NEFE High School Financial Planning Program, which has educated over 2 million high school students in basic personal finance concepts, has had a strong post-program impact on students (Danes, 2004). An evaluation of 483 teachers and 5,329 students across the country revealed that participating teens maintained increases in financial knowledge and skills over a three-month period after having taken the course. Nearly two-fifths (59%) understood the costs of buying on credit and more than half (53%) knew about investments. Connecting increased knowledge to behavior, the study found that more than half of the teens (53%) improved skills for tracking spending and two-fifths (60%) reported a change in their saving patterns. Upon completion, nearly four-fifths (78%) reported feeling more confident about managing their money.

Money 2000, a Cooperative Extension System program that focuses on debt reduction and/or savings accumulation, included an extended-period behavioral monitoring program (O'Neill, 1997). Emphasis was placed on achieving specific measurable goals set individually by enrollees. Eight out of ten respondents (80.4%) affirmed that the program improved their financial situation. As of the end of 2000, over 13,000 participants in 22 states reported a cumulative increased savings of USD 10,618,271 and a cumulative decrease in consumer debt of USD

8,247,219 (a total effect of USD 18,865,490; Money2000, 2000).

Bernheim et al. (2001) studied the relationship between high school financial curriculum mandates and adult savings patterns and net worth. The study concluded that mandates increase exposure to financial education, and financial education is associated with higher savings rates and higher net worth. They conclude, "education may be a powerful tool for stimulating personal saving" (Bernheim et al., 2001, p. 426).

Individual Development Accounts (IDAs) are a policy initiative designed to help low-income families build wealth (see, for example, Sherraden, 1991). IDAs are meant to improve access to savings institutions for the poor by providing matching funds for savings toward home ownership, higher education, and microenterprise. The American Dream Demonstration (ADD) project evaluated data on IDAs of 2,378 participants (Schreiner et al., 2002). The data showed that average monthly net deposits per participant were USD 25.42. On average, participants saved 67% of their monthly savings target. The average match rate was two-to-one, and participants accumulated about USD 900 per year in their IDAs. Financial education was part of the IDA initiative; the ADD data showed that average monthly net deposits "increased sharply as hours of general financial (education) attendance increased from zero to 12, after which it leveled off" (Schreiner et al., 2001, p. 115). This finding seems to confirm Bernheim et al. that education is a powerful tool for stimulating savings.

Hirad and Zorn (2001) examined the effects of pre-purchase homeownership counseling on reducing 90-day delinquency rates. "Counseling" was defined as "specific and tailored to the particular needs of the individual, while education typically is administered in a generic program" (Hirad and Zorn, 2001, p. 5). Only consumers with at least 18 months of data were included in the study. Data on almost 40,000 mortgages revealed that borrowers receiving counseling had a 19% lower 90-day delinquency rate than those without counseling. Moreover, borrowers receiving counseling through individual programs experienced a significantly greater reduction in delinquency rates, 34% compared to 26% reductions for borrowers receiving classroom counseling, and 21% for those receiving home-study counseling. This study provides an important implication for the need to personalize the educational experience – education may work best when combined with counseling, coaching, or mentoring.

There is, however, some limited evidence that education may not always work. In a study of Chapter 13 debtors, Braucher (2001) found that, controlling for some other factors, consumers who attended debtor education were about 12% less likely to complete their repayment programs. One possible explanation for this counter-intuitive result is that the effects of other unmeasured variables, such as income level, level of debt, and format of the educational program may be confounding the results of the program.

These examples plus others, summarized briefly in the table below, provide some concrete evidence that financial education – in various forms – can work to improve the

economic status of families. However, it is important to remind ourselves that at the same time these programs are showing positive impacts at the micro level, we still see evidence of problems with credit and bankruptcy and with a lack of planning and participation in retirement savings at the macro level. There is still room for improvement in the financial literacy levels of U.S. households.

Table 1

Summary of Financial Education Impact Evaluations

Authors	Date	Audience/Program	Content
Shelton and Hill	1995	Low- to moderate-income first-time home buyers	Connection between financial education and participants' effective budgeting behavior and home-ownership preparedness
DeVaney, Gorham, Bechman, and Haldeman	1996	Women's financial management	Participants changed attitudes and selected financial management behaviors
O'Neill	1997	Money 2000	Improved financial situation; self-anchoring goals achieved (debts reduced, savings increased)
Boyce and Danes	1998	NEFE High School Financial Planning Program	Teens maintained increases in knowledge and skills; increased confidence in managing money
Garman, Kim, Kratzer, Brunson and Joo	1999	Employees	Workplace financial education improves financial decision making and increases confidence in investment decisions
O'Neill, Xiao, Bristow, Brennan and Kerbel	2000	Money 2000	Changes for 15 financial behaviors and attitudes
Bernheim, Garrett and Maki	2001	Students in states with financial education mandates	Mandates increase exposure to financial education; financial education associated with higher saving rates and higher net worth
Clancy, Grinstein-Weiss and Schreiner	2001	IDA participants	Variations in content materials, quality of teaching, teacher/student ratio affect program evaluation; differentiate financial education in general versus financial education as delivered by a specific program
Braucher	2001	Bankruptcy clients	Those attending debtor education were less likely to complete repayment programs
Hirad and Zorn	2001	Home buyers	Among a variety of pre-purchase educational tactics, counseling was associated with lower rates of 90-day delinquencies
Kim, Kratzer and Leech	2001	Employees	Workplace financial education increases participation in 401k plans
Schreiner, Sherraden, Clancy, Johnson, Curley, Grinstein-Weiss, Zhan and Beverly	2001	IDAs and American Dream Demonstration	Monthly net deposits per participant increased as hours of financial education increased from 0 to 12
Elliehausen, Lindquist and Staten	2002	Credit counseling program	Those going through one-on-one counseling had higher credit scores and better credit management practices.

Table 1

Summary of Financial Education Impact Evaluations

Authors	Date	Audience/Program	Content
Brobeck, Clarke, Wooten and Wilkening	2003	America Saves	Participants increased interest more than confidence and confidence more than knowledge in saving and wealth-building; motivation alone is not enough to make informed decisions and institute behavioral changes
Lyons and Scherpf	2003	Money Smart – low income families	Increased financial knowledge, better able to manage finances
Anderson, Zhan and Scott	2004	Low-income families	Incentive is an important factor when designing financial education programs
Bernartzi and Thaler	2004	Save More Tomorrow – workers	Increases in 401k savings out of future raises; increased participation rates and increased contribution rates
Danes	2004	NEFE High School Financial Planning Program	Teens increased knowledge, skills, and confidence in managing money, and maintained these increases over a three-month period
Lusardi	2004	Health and Retirement Study	Financial education (attending retirement seminar and asking for Social Security estimate) associated with increases in financial net worth and total net worth
Rand	2004	Welfare recipients and low income workers	Knowledge gains across several categories of financial management; increases/improvements in several financial management behaviors
Rupured	2004	Consumer Financial Literacy Program, University of Georgia	Better account management, increased savings
VISA	2004	Washington DC metro area high school seniors	High school seniors increased knowledge in money management, credit cards, and how to achieve financial goals with continuous improvement over a period of four months
Hagedorn	2004	1st–4th graders in Cleveland and Chicago – Money Savvy program	Positively affected students' attitudes and knowledge about spending, saving, and investing money
Hogarth, Hilgert and Kolodinsky	2004	Community development credit union members	Study over 3 years; benefits of education for consumers, their families, their community
Hira and Loibl	2005	Employees of an insurance company	Better understanding of personal finances and future impacts; gains in confidence in future financial situation and increase company loyalty
Hagedorn	2005	Children in Cleveland, Washington State, Chicago, North Dakota (Money Savvy program)	Increased general knowledge about spending, saving and investing money for youth
Lyons, Palmer, Jayaratne and Scherpf	2006	Financial education providers (community educators and others)	A review of the evaluation capacity of community educators and others delivering financial education programs
Lyons, Chang and Scherpf	2006	Low-income program participants	Behavior changes related to both education and level of experience; those with less experience reported greater behavior changes

Table 1

Summary of Financial Education Impact Evaluations

Authors	Date	Audience/Program	Content
Hagedorn	2007	Children in public schools in Memphis, TN (Money Savvy program)	Similar results for other Money Savvy programs
State University of New York	2007	Economically-disadvantaged adult learners	Improved financial attitudes and increased saving; students improved continuously during and after the two year program

Box 2

The OCU Case Study

In 2001 and again in 2004, members of the Opportunities Credit Union (OCU, a community development credit union in Vermont) were surveyed regarding their involvement with the credit union – for example, which services they used (savings, transactions, lending, and a variety of educational services) and which of these services they found to be first, second, and third "most important." Members were also asked whether and to what degree OCU helped them manage their money, get their finances on track, pay off debts, expand their financial goals, save more, have more assets, increase household income, improve job opportunities, improve housing opportunities, become more self-confident, improve their quality of life, feel more hopeful, and be more involved in their neighborhood and community. These measures represent the outgoing ripples of the impacts of financial education:

- *First-level benefits of membership are defined as those directly related to household financial management*
- *Second-level benefits relate to the households' interactions with their near environment – housing, jobs, etc.*
- *Third-level benefits are the most "macro" in nature, including increases in confidence, perceived quality of life and hopefulness, and involvement in the community.*

Here we report on the links between the use of educational services offered by OCU and members' assessment of their ability to manage their money, get on track financially, and so forth. Because the data are a longitudinal panel, and because of the usual problems with attrition and non-response in panel data, we have fewer than 50 observations and are only be able to present a descriptive analysis across the three-year period. Nonetheless, we feel these data provide some valuable insights into the potential links between financial education, financial services, and community development outcomes.

In 2001, 13% of respondents indicated that the credit union's educational services were the "most important" service they used; by 2004, no one said educational services continued to be the most important, although 38% indicated they were the second- or third-most important credit union services used. The specific education services included in the survey were budget counseling programs, credit repair, member newsletters, advisory services, homeownership counseling, home bridge programs, and super savers.

Savings and Loan Balances

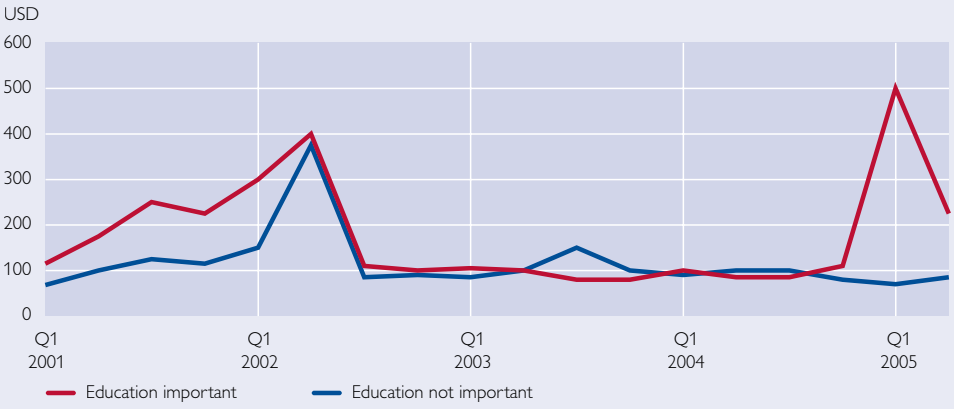
Data from 2001 to 2004 show some interesting trends in savings and lending patterns. In general, those who said educational services were important had higher levels of savings at the start of data collection in 2001 and at the end of data collection in 2004 (table). While this group had higher loan balances than their counterparts in 2001, they had lower balances by 2004.

Savings and Loan Balances in First Quarter 2001 and in Final Quarter 2004, by Importance of Educational Services Reported in 2004

	Those in 2004 who did *not* say educational services were important	Those in 2004 who said educational services were important
Savings balance	USD	USD
1st quarter, 2001 data	68	115
Final quarter, 2004 data	82	223
Loan balance		
1st quarter, 2001 data	369	647
Final quarter, 2004 data	882	82

However, these "end point" data mask some of the more interesting variations over time, particularly with respect to savings patterns. As seen in the graph below, there seems to be quite a bit of variability. One hypothesis consistent with this pattern is that households save up for something and then buy it with their savings, thus depleting their savings. What is interesting is that there is variability among both those who said OCU educational services were important and those that did not.

Savings Balances from 2001 to 2004



Source: Opportunities Credit Union.

Financial Education and Community Involvement

We next looked at whether members reported any first-, second-, or third-level benefits and the role that financial education played (table). Financial education seems to make the biggest impact at the primary benefit level. In 2001, 59% of those saying educational services were important reported a first-level benefit while only 30% of those saying educational services were not important reported a first-level benefit. Although larger proportions of members reported first-level benefits in 2004, the differential remained between those who felt educational services were important and those who felt they were not. In part, this "education differential" may be because many OCU members are still working on these first-level benefit skills.

Interestingly, between 2001 and 2004 reports of second-level benefits went down, although the role of education remained important. Education for this category of benefits extends beyond basic money management, to investing, acquiring and managing assets, and extending financial goals beyond the near-term. As members stay with the credit union (that is, if they don't graduate to a bank), OCU may need to investigate higher levels or different kinds of financial education.

Reports of third-level benefits remained the same across the three years, with slightly higher proportions of those saying that education was important reporting these third-level benefits (77% versus 74%).

Percent Experiencing First-, Second-, or Third-Level Benefits from Credit Union Membership by Year and Importance of Financial Education Services

%

	2001			2004		
	Reporting benefit in 2001	Those in 2001 who did *not* say educational services were important	Those in 2001 who said educational services were important	Reporting benefit in 2004	Those in 2004 who did *not* say educational services were important	Those in 2004 who said educational services were important
First level	41	30	59	57	48	71
Second level	84	78	94	62	67	71
Third level	74	74	77	75	74	77

Source: Hogarth, Hilgert and Kolodinsky (2004).

The table reads: Looking at the 2001 answers of the respondents from 2004, 41% reported a first-level benefit; among those in 2001 who said educational services were not important, 30% reported a first-level benefit compared with 59% of those who said educational services were important. By 2004, 57% of respondents reported a first-level benefit; among those in 2004 who said educational services were not important, 48% reported a first-level benefit compared with 71% of those who said educational services were important.

Although it is clear that financial education is beneficial and has a positive impact on the lives of consumers, what kind of an impact and to what degree are often difficult to measure. Increased knowledge does not necessarily change behavior. Researchers and practitioners continue to debate the rigor of various evaluation techniques and the measures to use (Lyons, 2005). While knowledge, attitudes, behaviors, and outcomes (dollars saved or debt reduced) are often the metrics, researchers and program evaluators are beginning to coalesce around the desirability of outcome measures.

In addition, the wide variety of financial education objectives makes measuring changes in behavior difficult. A study evaluating the impact of mortgage counseling on first time home buyers would have to be conducted very differently than one measuring the change in financial knowledge of high school students as the result of a financial education curriculum. Evaluation frameworks need to be tailored to fit the program and individual objectives. Sebstad, Cohen, and Stack (2006) lay out a framework for evaluating financial education programs and state that "Any evaluation strategy needs to start by defining a specific set of questions, relevant levels of analysis, and measurable indicators. The choice will depend on the purpose of the assessment, the audience, and resources available. It also will depend on what reasonably can be expected to change as a result of the program within the time frame of the study" (Sebstad, Cohen, and Stack, 2006, page 4).

In 2007, the National Endowment for Financial Education released an evaluation toolkit designed to help community groups conduct evaluations and assess the impacts of their programs (see www.nefe.org/eval/). The toolkit consists of two online components: a manual and a database. The manual provides information on

designing the measurement tool, collecting and analyzing the resulting data, and developing reports to stakeholders. The database provides sample evaluation questions and helps educators design an evaluation for their financial education program.

4 Challenges and Conclusions

We began this paper with a goal of providing an overview of the economic and financial education efforts of the Federal Reserve System. We discussed a number of financial education programs and resources, and we touched on a number of evaluative efforts that document the impacts of these initiatives in terms of increased knowledge and improved financial management behaviors, at least at the household level.

It is important to keep in mind that knowing and doing may be two different things. Financial education, often associated with increasing knowledge, may require a combination of information, skill building, and motivation to make the desired changes in behavior. The distinction between information and education is an especially important point for policymakers and program leaders making decisions about the allocation of resources. Financial education and awareness campaigns and learning tools (for example, websites or brochures), all important in their own right, may need to be coupled with audience-targeted motivational strategies to elicit the desired behavioral changes in financial management practices.

As Bernanke testified in 2006, "Financial education is a critical component of a robust and effective financial marketplace, but it is not a panacea. Clear disclosures, wise regulation, and vigorous enforcement are also essential to ensuring that financial service providers do not engage in unfair or deceptive practices." (Bernanke, 2006) It is also important to keep in mind that financial education is only one part of an economic development strategy. Financial education can serve to complement other policies that enable financial access, provide for substantive protection in the financial marketplace, and offer mechanisms for redress. Also, it is necessary to note that education may need to be accompanied by advising – although general education and financial education courses can be helpful, consumers need to apply what they learn to their families and their situations. In the end, personal finance is, after all, personal.

Making the link between financial education and macroeconomic outcomes is a bit thornier. Logically, financially-educated consumers should make better decisions for their families, increasing their economic security and well being. Secure families are better able to contribute to vital, thriving communities, further fostering community economic development. But identifying and documenting those links is difficult – data hint at the potential relationships between financial education and community involvement and give us some hope that financial education programs really are making a difference in communities and societies, and that we will some day be able to document those differences more robustly.

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Appendix

Financial Education Programs and Foreclosure Mediation Initiatives of the Federal Reserve System[2]

In Order of Federal Reserve Bank District

Federal Reserve System

American Savings Education Council is a national coalition of public- and private-sector institutions committed to making saving and retirement planning a priority for all Americans. ASEC is a program of the Employee Benefit Research Institute Education and Research Fund (EBRI-ERF). ASEC brings together public- and private-sector partners to share information on best practices and to collaborate on financial-security initiatives, including the federal

[2] *Taken from Testimony of Ben S. Bernanke on May 23, 2006: www.federalreserve.gov/boarddocs/testimony/2006/20060523/default.htm and Sandra F. Braunstein on March 27, 2007: www.federalreserve.gov/boarddocs/testimony/2007/20070327/default.htm.*

government's *Savings Matters* campaign (now in its tenth year), the *Choose to Save*® public service campaign, and the U.S. Securities and Exchange Commission's Facts on Saving and Investing campaign. The Federal Reserve Board is an ASEC mission partner, along with other government agencies, educational institutions, and nonprofit organizations committed to increasing awareness of the importance of saving and financial education.

The Federal Reserve is active in the *America Saves* initiative and serves on the National Savings Forum, its national advisory committee. The mission of this nationwide campaign – sponsored by nonprofit, corporate, and government groups – is to help individuals and families save and build wealth. The program is targeted at low- and moderate-income families, to raise their awareness and support their efforts to become more financially secure. Through local and regional campaigns, *America Saves* recruits "savers," who commit to the program and pledge to save. As a result of their commitment, savers receive information and education about strategies for fulfilling their financial goals, such as reducing debt, building an emergency fund, and saving for a home, education, or retirement. The Federal Reserve Bank of Cleveland played a significant leadership role in developing and launching Cleveland Saves, a pilot program for the national America Saves campaign. The program has also launched the targeted initiatives *Black America Saves, Hispanic America Saves,* and *Military Saves*.

Financial Literacy and Education Commission (FLEC), established by Congress in 2003 through the passage of the Financial Literacy and Education Improvement Act, was created to "improve the financial literacy and education of persons in the United States through development of a national strategy to promote financial literacy and education." The Federal Reserve, along with numerous other federal government agencies, is a member of this commission, which is supported by the Treasury Department's Office of Financial Education.

U.S. Conference of Mayors' National DOLLAR WI$E Campaign was developed to encourage the development of ongoing local strategies to educate citizens about financial issues. With improved basic money management and financial planning skills, citizens are in a better position to own homes, raise healthy families, educate their children, and invest in small businesses. The Federal Reserve Board serves as an advisor to the National DOLLAR WI$E Campaign. The Federal Reserve Banks of Cleveland, Chicago, and St. Louis provide supporting programs that have been described as best practices by the U.S. Conference of Mayors.

Operation HOPE is a nonprofit organization that provides lower-income and minority populations and communities with financial education and access to financial services. Its mission is to improve asset-building skills and accessibility of mainstream financial services for its constituencies. The organization, founded in 1992, is effective in creating public-private collaborations to fulfill its mission. Among its many national partners are the Federal Reserve Board, the FDIC, the Department of Commerce, H&R Block, E*Trade, Citigroup, and Bank of America. The Federal Reserve System has partnered with Opera-

tion HOPE in launching its youth financial education program Banking on Our Future in Washington, D.C.; Providence, Rhode Island; Atlanta, Georgia, and Los Angeles, California. A Federal Reserve Board staff member serves on Operation HOPE's Mid-Atlantic advisory board.

*The Jump$tart Coalition for Personal Financial Literacy,* in its 12-year history, has brought visibility and – through its biennial survey of high school seniors – research-based data to the financial literacy movement. Jump$tart is a Washington, D.C. – based not-for-profit organization that seeks to improve the personal financial literacy of students in kindergarten through college. The coalition has grown to include nearly than 190 national partners and 43 affiliated state coalitions. One of its premier services is the Jump$tart Personal Finance Clearinghouse (www.jumpstartclearinghouse.org), a website that lists more than 675 financial literacy titles and provides information about speakers and training programs. The Federal Reserve is a partner and serves on the Jump$tart Coalition board of directors.

The Fed Challenge, in its twelfth year, is an academic competition in which five-member student teams play the role of monetary policy makers. In this role, each team makes a presentation in which it analyzes the current economic situation and advocates a monetary policy prescription. The team then engages in a question-and-answer session in which the judges probe to examine students' understanding of the mechanics of monetary policy, macroeconomic concepts, and the workings of the Fed. The Fed Challenge has been a great success, as measured by participants' grades on Advance Placement Exams, adoption of the program by other central banks (for example, the central banks of England, New Zealand, and South Korea); recommendations in the New York State Economics Syllabus, textbooks, and the National Academy Foundation's Academy of Finance curriculum; and anecdotal evidence offered by teachers that the Fed Challenge profoundly affects participants' career choices. The Fed Challenge is organized by the Federal Reserve Bank of New York, and many other Federal Reserve Banks participate.

FederalReserveEducation.org is the Federal Reserve System's financial education website, designed to increase the use of Federal Reserve educational materials and promote financial education in the classroom. The website has material intended for the general public, as well as materials specifically geared toward teachers and high school and college students. It provides easy access to free educational materials, a resource search engine for teachers, and games for various ages and knowledge levels. FederalReserveEducation.org is maintained by the Federal Reserve Bank of Kansas City.

Federal Reserve Community Affairs Research Conferences are sponsored to invite and highlight research on a variety of issues that affect consumer financial service policies and practices. Since 1999, this biennial event has featured research that evaluates and explores the role of financial education in improving financial outcomes for consumers, particularly those with lower incomes.

Foreclosure Mediation. The Federal Reserve System's Community Affairs Offices have been engaged in a variety of activities to respond to the needs of low- and moderate-income communities experiencing an increase in foreclo-

sures. Some activities by Reserve Banks are building their understanding of the problem and its manifestation in each District. Others are working with community stakeholders to advance understanding of foreclosure prevention strategies, several of which are in conjunction with the NeighborWorks America® (http://www.nw.org/network/home.aspa), a national nonprofit housing development network.

Boston

The New England Economic Adventure is an hour-and-a-half interactive exhibit at the Federal Reserve Bank of Boston that highlights New England entrepreneurs Francis Cabot Lowell, Colonel Albert Pope, and Ken Olson and investment decisions they made that enabled workers to be more productive. Increased productivity helped to raise the standard of living of the average New Englander and contributed to the overall economic growth of the region. Program use and effectiveness is tracked through visitor and teacher evaluations and an online evaluation form. Numbers of visitors, including those from low- and moderate-income communities, are also recorded.

Peanuts & Crackerjacks is an online economic education program that simulates a baseball game to teach economic concepts. Pitches are questions, correct answers to questions about the economics of team sports lead to hits and runs, and wrong answers are outs. The site also includes a teacher's guide. *Show Business – the Economic$ of Entertainment,* focuses the concept of markets and draws from the music industry to tap into students' own experience.

Talking About College is a curriculum created in collaboration with Citizen Schools, the national after-school program. It was created for middle school students to nurture their aspiration to attend college and to assist them in financial planning and the college-selection process. This curriculum has been taught as a financial literacy "apprenticeship" in after-school programs in the Boston Public Schools. The curriculum includes a built-in assessment.

Foreclosure Mediation. The Community Affairs Office has published a paper on foreclosure issues and trends in Massachusetts, including data on foreclosure patterns in the state. In addition, it has developed a consumer education brochure on mortgages, "Know Before You Go... To Get a Mortgage a Guide to Mortgage Products and a Glossary of Lending Terms" (http://www.bos.frb.org/consumer/knowbeforeyougo/mortgage/index.htm), to provide general mortgage information to consumers.

New York

It's All About Your Money is a program, offered in two formats, that promotes financial awareness among students in grades 4 to 8. In one format, groups of 30 to 35 students visit the Bank for roughly three hours to take part in a series of activities, including a play about bartering; an active-learning exercise about how money has changed over time; social studies lessons derived by examining foreign currency notes; and several team and individual activities focusing on budgeting, saving, and other personal finance topics. In the second format, teachers direct all of the activities described in the first format in their own

classrooms by using a package of materials and guides ordered directly from the Bank through the Internet. Success is measured by the teachers, who engage students in activities and assignments before and after their visit to the Bank. Students then write letters to the Bank discussing what they learned and what they intend to do differently as a result of the program. In the 2005–2006 school year, the program was presented to 55 schools, mainly in low- and moderate-income communities, as planned.

Foundations of Finance: Money Management for High School and College Students is a money management workshop that teaches students basic sound practices that foster wise financial decision making. Workshop content is flexible and can be adapted to the content, format, and time specifications set forth by each host school or college. Frequently requested topics include college financing, the benefits and risks of credit use, financing life's expected and unexpected contingencies, budgeting and building net worth, taxes and other financial obligations, wise consumer practices, work and compensation, and common financial mistakes. Success is measured by school administrators and educators, who meet to determine the extent to which the workshops helped to encourage changes in curricula and mandates. Ideally, the workshop results in the development of new courses, mandated personal finance awareness sessions for all students, or changes in course content. An attempt is made to contact all students who participated in the workshop to determine how it changed their financial practices.

Wall Street Economics and Finance Club reaches approximately 50 high school students from throughout the Second Federal Reserve District who convene for eight two-hour monthly meetings at the New York Fed to learn more about the structure and functions of the financial system. Students take part in numerous activities, including discussions with economists, analysts, and traders at private-sector financial institutions; visits to trading floors and financial exchanges; their own presentations about financial developments and issues; and educational competitions that lead directly to internships. The Bank measures success by participating in discussions with educators involved in the program, attempting to determine the extent to which club activities resulted in changes in lesson plans, curricula, course offerings, and students' performance and interest in finance-related topics. Students in the club become ambassadors to their classmates, encouraging greater interest in economics and finance as a course of study or career.

Foreclosure Mediation. The Federal Reserve Bank of New York is focused on using data to inform its targeted geographies (Albany, New York City, Rochester, Puerto Rico) for information sharing, highlighting of best practices, and educating both the private and non-profit sectors on the foreclosure challenges and prevention. Toward this end, the Community Affairs Office sponsored two forums in November 2006. The first meeting convened mortgage servicers and lenders to discuss foreclosure prevention best practices and strategies, resulting in increased involvement on the part of many lenders, funding for anti-foreclosure programs by foundations, and the establishment of special 1-800 numbers or designated contacts to non-profit housing counselors. The

second meeting aimed to educate non-profits about how the mortgage securitization process works, which resulted in providing some housing counselors a common language to facilitate a better understanding of why some work-out strategies are more feasible than others.

Philadelphia

Finding the Keys to Your Financial Success is an annual, free, five-day training program for educators on a curriculum created by the Bank, the University of Delaware, the Delaware Bankers' Association, and the Consumer Credit Counseling Services of Maryland and Delaware. The program is used extensively in Delaware schools, and over the past two years it has been promoted it to schools in seven Pennsylvania and New Jersey school districts.

Buried by Debt: the Dangers of Borrowing is a 14-minute video for adults that describes the pitfalls of borrowing against your home. On the video, six Philadelphia District residents tell the viewers, in their own words, how they lost or nearly lost their homes by making unwise borrowing decisions. The Bank created the video at the request of ministers who were contacted to assist with outreach to low- and moderate-income minority homeowners who were most at risk because of lending abuses. The Bank has distributed over 4,000 copies to organizations throughout the United States and abroad. The video is shown at training events conducted for faith-based organizations interested in delivering financial education programs. A Spanish version is also available.

Money and Banking for Educators, the Bank's signature free summer professional development course for teachers, is in its third year of existence. It is designed to provide teachers with active learning techniques to enhance students' understanding of the economy, the Federal Reserve System, and monetary policy. Those who elect to receive graduate-level credits for the course enroll through a participating university.

Personal Finance for the Middle School Classroom is a five-day professional development course for K-12 educators taught by Federal Reserve economic education specialists and staff from the state centers for economic education. The course covers how to teach students about money, banking, and the Federal Reserve System. Emphasis is placed on strategies for active and collaborative learning.

Personal Financial Education Curricula and Compendium of Providers provides information on training materials and other resources available to the public, as well as organizations that offer educational services in the Third Federal Reserve District.

Foreclosure Mediation. The Federal Reserve Bank of Philadelphia published a technical brief on HEMAP (http://www.phfa.org/consumers/homeowners/hemap.aspx), a state-funded program in Pennsylvania that assists homeowners who are in default, but who can be expected to "recover" in a reasonable period of time. The Community Affairs Office's outreach has focused on increasing public awareness on the need to understand mortgage terms. The program developed a video on debt, which includes a focus on being a knowledgeable mortgagee.

Cleveland

The Learning Center and Money Museum was opened in January 2006. The Learning Center features over 30 interactive exhibits and related educational programs centered around the theme "What gives money value?" The educational programs were designed by the Bank, with teacher input, based on state educational benchmarks. Programs include lessons on saving and spending, inflation, barter, and the Federal Reserve System. The Learning Center hosted over 2,500 visitors in its first quarter of operations, and reservations for Learning Center educational programs are booking seven months in advance. All program participants "strongly agree" that their Learning Center visit provided a valuable learning experience. The center has been endorsed by the Ohio Council on Economic Education.

Fourth District Financial Education Consortia launched in June 2003 with a series of roundtable meetings with financial institutions, government agencies, and community-based nonprofits. These meetings were convened to coordinate financial education programs and discuss how to improve financial education delivery in the Fourth District, in part in response to the Federal Reserve Bank of Cleveland's financial education survey "Financial Education: What Is It and What Makes It So Important," published earlier that year. The meetings were also a response to the growing complexity of financial services, predatory lending, wide gaps between white and minority homeownership rates, record low savings rates, and increases in personal bankruptcies and debt among American consumers. The roundtable meetings resulted in the formation of several financial education networks in the Cincinnati, Cleveland, and Pittsburgh regions. The Federal Reserve Bank of Cleveland has staff in each of those cities who act as coordinators for these initiatives.

The Essay Contest is an annual competition for area high school students. Essay topics are chosen with an eye toward engaging a broad range of students, not just students in economics classes. Topics have included the economics of children's literature, the economics of rock music, and economics on TV.

The Bank also participates in the *Fed Challenge* and hosts a number of other programs for teachers and students throughout the year, including workshops and student competitions with various partners such as Ohio Jump$tart, the Ohio Council on Economic Education, Junior Achievement, and local public libraries.

Foreclosure Mediation. The Federal Reserve Bank of Cleveland reports a widespread problem with mortgage foreclosures in weaker housing markets within the 4th District. Ohio also recently reported the highest rate of foreclosures in the nation. To address the issue, the Bank is serving as a convener of government, financial institutions and community based organizations in assessing and addressing regional foreclosure issues. Among the events Cleveland has hosted was an Ohio Foreclosure Summit in 2005 (http://www.clevelandfed.org/CommAffairs/Past_2005.cfm), which led to the introduction of the NeighborWorks 1-800 hotline in Ohio, and addressed issues of financial education, predatory lending, policy, regulation, and enforcement. In addition, the Bank participated in a 2006 Ohio Foreclosure Summit. Both summits included community, industry and government representatives.

Last year, the Cleveland Federal Reserve Bank participated in the launch of the official Financial Partnership of the Miami Valley Website and Directory, www.fepmv.org. Community-based organizations, non-profit organizations, financial and academic institutions partnered to produce this directory in 2005. The website and directory are resource guides to assist residents and community-based organizations in finding professional service providers that can provide assistance with basic money management and help in resolving difficult financial situations such as foreclosure.

The Cleveland Federal Reserve will soon release a research paper examining the data availability and gaps that exist in accurately tracking foreclosures within the district. The report explains the challenges that exist in assessing the scope and scale of the issue and barriers to address it due to lack of information.

Richmond

My Money is an educational package for elementary school students that includes a teacher's guide and student workbooks featuring lessons entitled "What is Money?", "Money Equivalents," and "Jobs, Money, Goods and Services." Over 1,100 *My Money* packages have been shipped to elementary schools worldwide since early 2006. Teacher feedback gathered from evaluation cards has been overwhelmingly positive.

The Essay Contest is an annual fall contest, sponsored by the Bank, designed to reach students who may not be enrolled in an economics class and have limited knowledge about personal finance and the Federal Reserve. High school juniors and seniors write a three-page essay on a financial literacy topic or the Federal Reserve. Winners receive savings bonds at an awards luncheon held at the Bank. In the fall of 2005, the essay theme highlighted the importance of saving at a young age. There were over 250 entries.

Financial Literacy Fairs are sponsored by the Bank for its employees each year, during Financial Literacy Month. Financial seminars address issues ranging from free credit reports, saving for retirement, and paying off credit card debt.

The Bank also partners with local and regional financial and economic education organizations, including the *Council on Economic Education* in Maryland, Virginia, North Carolina, and South Carolina.

Atlanta

Monetary Policy: Part Art, Part Science is a DVD-based lesson that focuses on the structure and functions of the Federal Reserve System, the Fed's role in formulating monetary policy, and how members of Reserve Banks' board of directors contribute to interest rate-setting decisions. This video was originally used as part of the Atlanta tour program; however, because of its popularity, it was adapted for use across the District and for distribution to educators. As part of this extension, a lesson plan entitled "Monetary Policy Starts in Your Own Backyard" was developed to accompany the DVD. The lesson and video were distributed to more than 4,300 educators in the spring 2006 Extra Credit e-newsletter.

Extra Credit, an e-newsletter published twice a year, is designed to help teachers looking for information, lesson plans and activities, and ideas for teaching economics and personal finance to middle school and high school students. The second edition of the e-newsletter, available on the Internet, was distributed in spring 2006 to more than 4,300 educators.

Financial Education Day at the Fed, an annual event, teaches eighth-grade students about personal financial education. More than 40 employee volunteers teach roughly 250 students money management skills through lectures and interactive exercises dealing with budgeting, credit, and saving. To measure the knowledge gained, students are given a test – both before and after the event – on the topics covered.

Workshops and tours reached roughly 2,000 educators and over 15,300 students in 2005. In addition to conducting workshops and tours, the Bank works with other organizations to collaborate on various initiatives to provide quality learning experiences for educators. In July 2005 the Bank – in cooperation with the St. Louis Fed's Memphis Branch, the Mississippi Council on Economic Education, and Mississippi Jump$tart – conducted a three-day economic and financial education workshop that reached over 100 educators each day. Similar collaborations are planned for 2006 throughout the District.

The Bank also works closely with the state *Department of Education* and state legislators on legislation and on a curriculum for a high school personal finance course. It also works with organizations that promote financial literacy, such as *Junior Achievement, Jump$tart Coalition, and the Academy of Finance*.

Foreclosure Mediation. The Atlanta District includes several of the southern states – Georgia, Florida, Louisiana in particular – where there are an increasing number of foreclosures. The ongoing challenges of rebuilding the Gulf Coast, when viewed in conjunction with the distribution of poor credit scores in southern states as detailed by the Brookings Institution (http://www.brookings.edu/metro/pubs/20060501_creditscores.htm) leads many to expect continued increases in foreclosures and defaults in the Sixth District. In Georgia, the Community Affairs Office is part of a state-wide foreclosure prevention taskforce, which is undertaking a series of activities around fraud prevention, consumer education, and training for counseling agencies. In the Gulf Coast, the Reserve Bank has supported outreach to consumers, including training for counselors and promotion of a hotline and workout arrangements, with a focus on foreclosure prevention.

Chicago

Money Smart Week, an annual event, continues to be the Bank's premier program for promoting the importance of financial and economic education to the Chicago community. In line with our goals to continue growth, participating partner organizations numbered 192 (up from 134 in 2005) and events numbered 274 (up from 220 in 2005). The campaign included promotional and marketing components such as a direct mail campaign to one million households, distribution of almost 400,000 Money Smart bookmarks to grades K-6 within the Chicago public schools, and street marketing campaigns to

distribute 40,000 event calendars. In addition, 5,000 Spanish language event calendars were distributed as part of the program.

Financial Education Research Center is a database of research on the impact of financial education programs. The goal of the center is to promote excellence in the field by providing online resources for researchers, educators, program directors, and others interested in supporting these types of programs and initiatives. The web-based tool also offers a listing of national financial education programs available to the public and educators.

Power of Money Curriculum Package includes two lesson plans and a nine-minute video about the Federal Reserve Bank of Chicago. Since its inception in 2003, the package has been distributed to almost 2,200 high schools in the five-state region. The total audience for the project is upwards of 250,000 students.

The Visitors Center and Tour Program continues to grow and receive positive feedback from the students, teachers, and members of the general public who visit the facility. Surveys in which visitors rated their experience in the Visitors Center show an 87% satisfaction rate, defined as a score of 4.5 on a 5-point scale. The total number of visitors in the Visitors Center during 2005 was 23,623, a 9% increase over 2004. Walk-in visitors are estimated to have totaled more than 5,000 in 2005. This was the second year in a row in which the number of visitors has exceeded 20,000. Since the museum opened in June 2001, new attendance records have been set each year.

Foreclosure Mediation. In the Chicago Federal Reserve District, the Community Affairs Office hosted a symposium in January to highlight non-traditional mortgage products and risks. In 2006, it published a paper on foreclosure alternatives and an article discussing the benefits and risks of nontraditional mortgage products.

St. Louis

Making Sense of Money and Banking is a one-week, three-credit college course hosted by the Bank in conjunction with the University of Missouri – St. Louis and Southern Illinois University–Edwardsville. The course is offered to K-12 teachers to help them integrate money and banking topics into social studies, language arts, and math lessons. Guest speakers from the St. Louis Fed are featured. June 2006 will mark the eleventh year of the course, which draws 25 to 35 educators each year. The success of the course is measured by attendance, formal course evaluations, and general commentary by actual and prospective students.

Teach Children to Save Day is a national event developed by the American Bankers Association Education Foundation in cooperation with the Bank, the University of Missouri – St. Louis Center for Entrepreneurship and Economic Education, and a number of metro area banks. Students in the first, second, and third grades are given 45-minute lessons on the importance of saving and then receive piggy banks. Of the 148 volunteers who delivered the program to 287 area classrooms, 68 were Bank employees. Success is measured by participation and by reaction from teachers and students.

Your Paycheck is a program conducted with Culver-Stockton College of Canton, Missouri, that focuses on teenagers earning their first paychecks and facing challenges related to money, credit, and financial responsibility. The program is sponsored by Quincy, Illinois, businesses that often employ teens. The program's trainers are Culver-Stockton students who are trained by Bank employees. Success is measured by evaluations from the student trainers and the program students.

Learn Before You Leap is a series of brochures listing counseling agencies that provide advice on every step of the home-buying process, from budgeting income to negotiating a contract to closing on a loan. Each of the brochures focuses on one of the Federal Reserve Bank's regional areas – St. Louis, Little Rock, Louisville, and Memphis.

Minneapolis

Supply, Demand, and Deadlines is an annual economics workshop for journalists. In its sixth year, the workshop – sponsored by the Bank and the University of Minnesota's Journalism School – was founded on the premise that a better understanding of economics can improve the reporting skills of journalists from all news beats, not just the business section. Roughly two dozen journalists from all types of media spend three days learning about economic principles and participate in a thorough case study. The workshop faculty includes college professors and experienced professional journalists. All participants are surveyed six months after the course to determine how they are applying what they have learned.

The Essay Contest for High School Students, since 1998, has challenged hundreds of high school students from the District to look through an economic lens to address questions about poverty, the environment, banking, economic development, and even illegal drug markets. The top 30 essay writers, along with their parents and teachers, are invited to the Bank for an educational program on that year's subject and to receive an award. Many teachers also use the contest materials in their class curriculum to apply economics to real-world issues. The Bank works with District teachers to regularly evaluate the effectiveness of this program.

The Bank has also assisted with the formation of local financial education organizations, including the Montana Financial Education Coalition (MFEC), the Montana Jump$tart Coalition affiliate, and the Minnesota Jump$tart Coalition affiliate. The Bank partners with the Native Financial Education Coalition (NFEC), created to promote financial education in native communities, and its Youth Initiatives Committee for the Building Native Communities adult financial education curriculum; the Minnesota Council of Economic Education; the Montana Council of Economic Education; the South Dakota Council of Economic Education; the Minnesota Saves Network; and the University of Minnesota's Center for Personal and Family Financial Education (CPFFE).

Foreclosure Mediation. The Community Affairs Office at the Minneapolis Federal Reserve Bank has worked to develop local data on foreclosures by purchasing sheriff's data and sharing it with audiences throughout the Twin

Cities, including a coalition to increase minority homeownership which has ongoing support from Community Affairs. Researchers have authored a paper analyzing foreclosure data in the Twin Cities to identify ways of predicting potential foreclosures, a potentially useful tool for targeting foreclosure prevention efforts. The research also makes recommendations regarding the availability of data on default and foreclosure. Staff also published an article in 2006 on the availability of foreclosure data, and a paper on various state approaches to regulation of mortgage brokers will soon be posted to its website.

Kansas City

The Workplace Financial Education Program encourages employers to offer financial education classes to employees. The program is a series of seminars that include budgeting for current and future needs, reducing debt, increasing savings, understanding how credit works, improving credit ratings, building a relationship with financial institutions, and maximizing retirement funds. To complement the classroom settings, each participant is offered up to two hours of confidential one-on-one counseling with a certified financial planner. This program was piloted by the Bank in October 2005. Kansas City's community affairs research economist conducts surveys, before and after the program, in order to publish results and findings from the program.

Jump$tart Your Money was organized in Oklahoma in 2005 and has successfully raised the profile of personal financial education. The event, one week of programs focusing on personal financial education, is sponsored by over 60 statewide partners. The Bank is working to replicate this program by establishing coalitions in Missouri, Kansas, and Nebraska. The Bank is also developing a comprehensive database and a public website to create awareness of financial education resources and services.

The Bank also participates in financial education networks in Oklahoma, Colorado, New Mexico, and Wyoming – most notably *Teach Children to Save Day* (Denver and Kansas City), *Oklahoma Jump$tart Coalition,* and *the Denver Financial Literacy Network*.

Foreclosure Mediation. The Kansas City Reserve Bank has been tracking and posting foreclosure and delinquency data from the Mortgage Bankers Association by each state within its District. Ongoing research is taking place to assess similarities or discrepancies in the data. In addition, a forthcoming paper will include a literature review around the possible causes of foreclosure, an analysis of foreclosure trends by mortgage types, and an assessment of the potential impact to the Tenth Federal Reserve District.

Dallas

Building Wealth: A Beginner's Guide to Securing Your Financial Future is a publication that introduces individuals and families to the idea of developing a plan for building personal wealth. It contains four sections: Learn the Language, Budget to Save, Save and Invest, and Take Control of Debt. Written in both English and Spanish, it is available in print and as an interactive website. Building Wealth is widely used as a basic financial education tool by a broad range of

professionals, including bankers and other lenders, credit counselors, homebuyer education providers, employers, and real estate professionals. Its popularity has increased steadily since its introduction in October 2000, and over 170,000 copies have been printed and distributed across the country. In addition, it is the most frequently downloaded publication on the Bank's website, with over 130,000 downloads in 2005.

Rx: Financial Health is the Bank's 2006 personal financial education workshop. It will address topics related to achieving financial health – such as credit scoring, banking services, and tax preparation – and will touch on state-legislated personal finance education initiatives. This workshop, open to all high school educators, is part of a series of annual workshops hosted by the Bank in partnership with the Texas Council on Economic Education. Several presentations will be conducted by representatives of both private and public organizations, including the Internal Revenue Service, the Federal Reserve Bank of Dallas, and the Texas Council on Economic Education. The workshop was held in Dallas and at the Bank Branches.

Where Did My Money Go? Making Money, Spending It, and Keeping It was the Bank's 2005 workshop series, which focused on money in the form of income, how personal choices affect future income, and the difference between money made and money kept. More than 300 high school teachers attended workshops conducted by Dallas Fed economists, the Consumer Credit Counseling Services, and Citigroup's Office of Financial Education. The one-day events were held at the Bank in Dallas and at Branches throughout the District.

Riding the Waves of the Global Economy was a Bank-hosted two-day economic summit for more than 130 high school faculty. The program focused on the world economy and international issues, with special emphasis on technology, financial markets, poverty, and outsourcing. Dallas Fed President Richard Fisher and Fordham University economics professor Darryl McLeod were featured speakers.

Foreclosure Mediation. Staff of the Community Affairs Office in Dallas participate in homeownership coalitions composed of financial institutions, non-profit organizations and local government representatives. In Dallas, the coalition has been meeting since 2004. They meet regularly to share information about the scope of the problem, and in Dallas have promoted a toll-free number sponsored by the GMAC Mortgage and Homeownership Preservation Foundation to link consumers to resources. A similar coalition has been recently organized in Houston.

The Federal Reserve Bank of Dallas is also organizing a foreclosure summit scheduled for June 2007 in partnership with Fannie Mae, Freddie Mac, National Association of Homebuilders, and the Council of Governments to convene stakeholders from throughout the state to help develop a better understanding of the problems and potential responses to delinquency and foreclosure.

San Francisco

There's a Lot to Learn About Money is the Bank's one-hour personal finance session for high school students, which supplements the Bank's tour program. This interactive session teaches students how to take control of their finances by understanding the time value of money through saving and investing, how to develop a budget, and how to use credit wisely. Since the program was launched in the fall of 2005, a total of 69 workshops have been held, reaching 1,620 students. Teachers also have access to the program curriculum through the Bank's website.

Open and Operating: The Federal Reserve Responds to September 11 is a video-based lesson that gives history and economics teachers a tool for introducing their students to the Federal Reserve System. The video combines news footage and interviews with Federal Reserve officials to illustrate how the Fed functions in the real world. The events of September 11, 2001, provide the context for this lesson, documenting how the Federal Reserve acted decisively to calm the financial markets, keep funds moving, and stabilize the economy. The program includes a videotape/DVD, a lesson plan booklet, and web-based resources. In the first quarter of 2006, 2,500 Open and Operating kits were distributed to high school teachers, reaching more than 17,500 students across the country.

The International Economic Summit (IES) is a program that educates high school students about the benefits of world trade while exploring the controversies associated with globalization. Working in small groups, student teams adopt a country and take on the role of economic advisor. Each student team evaluates conditions within their country and develops a strategic plan to improve living standards. A typical event hosts 300 to 400 students representing 60 to 80 countries. The event concludes with an awards ceremony recognizing those teams of economic advisors who achieved the goals of their strategic plan. Student teams also compete for awards in creative costume and table displays. The Bank established a partnership with the IES Foundation in 2003 to promote and support the program throughout the District. Since then, approximately 25,000 students have participated in the IES simulation in high school classrooms throughout California, Idaho, and Washington. Most recently, the first bi-national IES event hosted 300 high school seniors from San Diego County and Ensenada, Mexico.

Building Native Communities is a series of workshops offered in Portland, Sacramento, Seattle, and Phoenix to train tribal members and representatives of Native American community organizations to teach financial education curricula in their communities.

Individual Development Account Initiatives were launched in the District to establish partnerships for sponsoring match savings account programs for low- and moderate-income populations to save for buying a home, starting a small business, or pursing education. The programs include financial education for participants.

Foreclosure Mediation. The Federal Reserve Bank of San Francisco's Community Affairs Office has identified concentrations of subprime lending,

using data from a recent report from the Center for Responsible Lending (http://www.responsiblelending.org/) that identifies concentrations in California's Central Valley (Fresno, Bakersfield, etc.) and in Nevada, primarily Las Vegas.

The Community Affairs Office is planning a series of local roundtables in 2007 that will bring together local stakeholders – financial institutions, counseling organizations, local governments and community development practitioners, to identify in their local markets steps to: i) mitigate foreclosures, ii) implement foreclosure prevention strategies, and iii) mitigate the effects on neighborhoods where foreclosures are concentrating. Those roundtables are currently scheduled for San Francisco, Los Angeles, Phoenix, Las Vegas and Nevada. In each city, the goal is to seed a working group which will be able to collectively develop an action plan or strategy around issues such as increasing the capacity of local counselors, creation of rescue funds, or providing refinance opportunities.

Christoph Badelt
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Podiumsdiskussion:
Bildungspolitische Herausforderungen
für Österreich

Panel Discussion:
Education Policy Challenges for Austria

Christoph Badelt
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Bildungspolitische Herausforderungen für Österreich

Nach dem Gesamtkonzept dieser Tagung soll in diesem Beitrag ein Überblick über einige Herausforderungen der österreichischen Bildungspolitik unter dem besonderen Gesichtspunkt des tertiären Bildungswesens gegeben werden. Dabei zeigt sich, dass die in anderen Beiträgen angeschnittenen Themen des sekundären Bildungssystems nahtlos an das tertiäre Bildungssystem anschließen und es daher sinnvoll ist, bei großen Reformen auch auf die Wechselbeziehungen zwischen tertiärem und sekundärem Bildungssystem zu achten.

1 Herausforderungen für das tertiäre Bildungssystem in Österreich

Das tertiäre Bildungssystem in Österreich ist nach wie vor stark durch die öffentlichen Universitäten geprägt. Diese haben in den letzten Jahren als Folge des Universitätsgesetzes 2002 und den damit verbundenen institutionellen Reformen einen deutlichen Innovationsschub erfahren. Zu der innerösterreichischen Reformbewegung gesellte sich die Europäisierung des Hochschulwesens, welche unter dem Schlagwort der „Bologna-Architektur" zum Aufbau eines europäischen Hochschulraums geführt hat, der durch starke internationale Vernetzung, insbesondere durch Studierendenmobilität, aber auch durch eine Forderung nach Vereinheitlichung der Studienstrukturen und damit durch eine stärkere Wettbewerbsorientierung gekennzeichnet ist.

Der aktuelle Reformbedarf des tertiären Bildungswesens in Österreich ist nicht oder nur zu einem Teil Ausdruck einer schlechten Entwicklung in der Vergangenheit; viel mehr geht es darum, nach den eingeleiteten Innovationen nun die nächsten Schritte für die Zukunft zu setzen.

So ist es etwa in den letzten Jahrzehnten nicht nur zu einem Wachstum, sondern vor allem auch zu einer Ausdifferenzierung des tertiären Sektors gekommen. Die Einführung von Privatuniversitäten, pädagogischen Hochschulen, Fachhochschulen, aber auch die Etablierung verschiedener kürzerer Lehrgänge universitären Charakters – wie immer diese rechtlich genau heißen – haben einerseits dazu geführt, dass es im tertiären Sektor nicht mehr nur öffentliche Universitäten gibt; andererseits sind die verschiedenen Ausbildungsinstitutionen durch heterogene rechtliche Rahmenbedingungen gekennzeichnet, sodass es manchmal an einer sinnvollen Abstimmung zwischen den einzelnen Bereichen fehlt. Überdies wird für die verschiedenen institutionellen Typen seitens der Politik nicht immer eine kohärente Entwicklungsperspektive vorgegeben.

So sehr die Reform der Universitäten im Gefolge des Universitätsgesetzes 2002 (UG 2002) daher positiv zu beurteilen ist, so sind doch noch einige Punkte in einem umfassenden Reformprogramm übrig geblieben, die in den nächsten Jahren dringend einer nachhaltigen Lösung bedürfen. Dazu zählen unter anderem die Klärung der Frage nach Art und Intensität des Wettbewerbs zwischen den einzelnen Trägern des tertiären Bildungswesens, die Verbesserung des Systems der Leistungsvereinbarungen, die Regelung des Hochschulzugangs, aber auch die Sicherung einer

langfristigen Lösung des Themas der Studiengebühren und der Studienförderung.

Während sich die österreichische Bildungspolitik nach außen vorbehaltlos zur Bologna-Architektur bekennt, gibt es in der innerösterreichischen Bildungspolitik widersprüchliche Signale zur Realisierung dieses Vorhabens. So hat zwar der nationale Bildungsgesetzgeber die Einführung von dreijährigen Doktoratsstudien in Österreich beschlossen, die wirkliche Einführung von flächendeckenden Ph.D.-Studien setzt aber mehr als

einen Gesetzesbeschluss voraus: Die heute bloß in ersten Ansätzen vorhandenen und finanzierten Doktoratskollegs müssten eine explosionsartige Erweiterung erfahren, um das europäische Anliegen zu realisieren. Weiters geht die Gesamtarchitektur des europäischen Hochschulraums implizit von einer Kompatibilität des Hochschulzugangs aus, die allerdings für Österreich gegenüber seinen europäischen Partnern nicht existiert.

Weiterer Reformbedarf ergibt sich aus den unklaren und zum Teil widersprüchlichen Signalen der Politik hinsichtlich der Einstellung zur Spitzenforschung an öffentlichen Universitäten. Zwar ist es in den letzten Jahren gesellschaftspolitisch wieder opportun geworden, das Streben nach „Elite“ und „Spitze“ prominent in den universitätspolitischen Bemühungen zu verankern, dennoch hat die Einrichtung des Institutes for Science and Technology Austria (ISTA) in Gugging gezeigt, dass es der österreichischen Bildungspolitik im Zweifel wichtiger ist, eine neue Institution zu gründen, als die Spitzenforschung an den österreichischen Universitäten nachhaltig zu fördern. Über ein Exzellenzprogramm für die österreichischen Universitäten wird heute nach wie vor debattiert, zur Stunde ist die Finanzierung aber noch keineswegs gesichert.

Zusammenfassend ergibt sich im tertiären Bildungssystem zumindest in drei Hauptgebieten ein deutlicher Reformbedarf:

– Die Bildungspolitik braucht ein strategisches Gesamtkonzept, das sich auf die Universitäten, aber auch auf alle anderen Bereiche des tertiären Ausbildungssystems bezieht und das sich insbesondere den Wechselwirkungen zwischen diesen Bereichen widmet.
– Eine bessere Abstimmung der einzelnen Bereiche im tertiären Bildungssektor ist dringend notwendig; mit formalen Vorgaben wie vertikaler Mobilität (z. B. zwischen den Fachhochschulen und den Universitäten) ist es noch lange nicht getan, solange die Wettbewerbsbedingungen zwischen den Institutionen verzerrt sind und die Finanzierung völlig unterschiedlich geregelt ist.
– Die Entscheidungsträger in der Bildungspolitik werden nicht umhin können, eine Reihe von schwerwiegenden Problemen im Sekundarschulbereich und an der Schnittstelle zu den Universitäten einer Lösung zuzuführen, wenn

Österreich seine Bildungsreserven ausschöpfen und gleichzeitig mit einem realistischen finanziellen Aufwand leistungsfähige und wettbewerbsfähige Universitäten schaffen will.

2 Hochschulzugang als eine zentrale Herausforderung

Im folgenden Abschnitt werden die großen Themen des tertiären Bildungswesens anhand einiger Beispiele illustriert werden. An erster Stelle ist hier wohl die ungelöste Problematik des Hochschulzugangs zu sehen; es ist fatal, dass die Bildungspolitik in dieser Hinsicht offensichtlich von tatsächlichen oder drohenden Entscheidungen des Europäischen Gerichtshofes getrieben wird und dieses Land noch nicht die Kraft aufgebracht hat, eine umfassende und europäisch konsistente Lösung des Zugangsproblems zu propagieren, geschweige denn umzusetzen.

Es lässt sich nicht leugnen, dass der so genannte „freie" Hochschulzugang in vielfacher Hinsicht nur formal versprochen, in der Praxis jedoch nicht eingelöst wird. Zwar steht es – vom Sonderproblem etwa der medizinischen Studien abgesehen – einem Österreicher und einer Österreicherin frei, mit einem gültigen Maturazeugnis an einer österreichischen Universität zu inskribieren; diese formale Freiheit kann aber nicht über die massiven Kapazitätsprobleme der österreichischen Universitäten – vor allem in den sogenannten „Massenfächern" – hinwegtäuschen. Dabei geht es um jene Fächer, die auch in dem oft zitierten §124 b des Universitätsgesetzes auf Grund der Numerus clausus-Situation in Deutschland einer formellen Zugangsregelung unterworfen sind; diese ist jedoch so mild, dass rund 50 % der Studierenden in Österreich in ungünstigen, 30 % in extrem ungünstigen Betreuungsrelationen (vgl. Pechar, 2007, S. 40) studieren müssen. Wenn an einer Universität wie der Wirtschaftsuniversität mehr als 260 Studierende auf einen Professor bzw. eine Professorin kommen, dann mutiert das politische Versprechen, den freien Hochschulzugang zu praktizieren – je nach Sichtweise – zu einer inhaltsleeren Phrase oder gar zu einem Zynismus.

Es gehört zu den Paradoxien der österreichischen Bildungspolitik, dass der formal freie Hochschulzugang insgesamt mit einer sehr niedrigen Bildungsbeteiligung im internationalen Vergleich einhergeht. So beträgt die Anfängerquote im Tertiärbereich in Österreich 37 %, in der OECD 53 % (OECD, 2006: 318). Die Akademikerquote als Abschlussquote im Tertiärbereich definiert, beträgt in Österreich 19,6 %, in der gesamten OECD 34,8 % (OECD, 2006: 66). Die pauschal niedrige Akademikerquote ist nur zu einem kleinen Teil durch Besonderheiten des österreichischen Schulsystems und damit durch statistische Artefakte zu erklären. Erschwerend ist, dass Österreich trotz des im formalen Sinn freien Hochschulzugangs im internationalen Vergleich unter einer besonders mangelhaften sozialen Durchlässigkeit des Bildungssystems leidet. So gibt es verschiedene empirische Evidenzen (vgl. Lassnigg et al., 2006, S. 392) dafür, dass sich die soziale Schichtung der Akademiker/innen in Österreich weitgehend vererbt, dass damit die Zugangsquoten von jungen Menschen aus bildungsfernen Schichten über die letzten Jahre und Jahrzehnte keines-

wegs verbessert worden sind, sieht man vom Problem der formalen Gleichberechtigung zwischen den Geschlechtern ab, die in den letzten Jahren weitgehend erreicht worden ist.

Die österreichischen Universitäten haben schon seit vielen Jahren eine nachhaltige Reform des Hochschulzugangs gefordert. Die Österreichische Rektorenkonferenz hat vor wenigen Monaten eine umfassende Studie zum Thema fertig gestellt (Badelt et al., 2007) und diese Studie nicht nur als analytische Grundlage einer rationalen politischen Diskussion an die Öffentlichkeit gebracht, sondern darauf aufbauend auch eine Reihe von bildungspolitischen Forderungen formuliert. Dazu zählen insbesondere:

- Die österreichischen Universitäten befürworten nachhaltig ein Wachstum der Zahl der Akademiker/innen in Österreich, wobei es den Universitäten nicht so sehr um die Zahl der Studierenden als um die Zahl der erfolgreichen Absolventen geht.
- Die Universitäten, vertreten durch die Rektorenkonferenz, verlangen einen raschen und nachhaltigen Abbau der sozialen Selektivität des österreichischen Hochschulsystems.
- Die österreichischen Universitäten kämpfen für adäquate Studienbedingungen, vor allem auch in jenen Fächern, wo heute die Betreuungsrelationen so schlecht sind, dass ein international akzeptabler qualitätsvoller Studienbetrieb nicht möglich ist.
- Die Verwirklichung dieser bildungspolitischen Ziele wird nur mit einer Steigerung der öffentlichen Ausgaben für das Hochschulwesen möglich sein. Die Rektorenkonferenz schließt sich daher vorbehaltlos dem Vorschlag der Europäischen Kommission an, langfristig 2% des Bruttoinlandsprodukts für das Universitätssystem auszugeben.

Die Umsetzung dieser Rahmenforderungen für den Hochschulzugang in Österreich wird nur funktionieren, wenn sich die österreichische Hochschulpolitik zu einer Reihe von Grundprinzipien bekennt, die auch von der Rektorenkonferenz nachhaltig vertreten werden:

- Die Hochschulpolitik muss sich endlich dazu bekennen, für die einzelnen Studienrichtungen beziehungsweise Universitäten Kapazitäten festzulegen. Es ist nicht einsehbar, warum an jeder anderen Bildungseinrichtung in Österreich klar definiert ist, wie viel Studierende an einer Einrichtung Platz haben, eine solche Festlegung wird an den Universitäten jedoch tabuisiert.
- Die Feststellung solcher Kapazitäten muss mit einer entsprechenden studienplatzorientierten Finanzierung einhergehen. Auch wenn der Ausdruck heute nicht populär klingt, muss es doch zu so etwas wie einer Studienplatzbewirtschaftung in Österreich kommen. Dies bedeutet nicht, die Zahl der Studienplätze einzuschränken. Wohl aber ist damit die unabdingbare Forderung an den Staat verbunden, Studierenden auch adäquate Ausbildungsbedingungen zu gewähren.
- Die Festlegung der Kapazitäten könnte mit Hilfe des durch das UG 2002 eingeführten Instruments der Leistungsvereinbarun-

gen erfolgen. Dort wäre klar zu stellen, wie viele Studierende eine Universität aufnehmen kann und wie viel die öffentliche Hand daher zur Ausbildung dieser jungen Menschen an Finanzmitteln aufzubringen hat.

Nur – und ausschließlich dort – wo es aus budgetären Gründen nicht möglich ist, allen Interessenten für ein Studium einen Ausbildungsplatz zu gewähren, sind Auswahlverfahren zu entwickeln, um jene Zuteilungsprobleme zu lösen, die durch die Knappheit der öffentlichen Mittel entstehen. Die Universitäten können und sollen diese Auswahlverfahren autonom gestalten, wobei es durchaus denkbar ist, den Rahmen für diese Auswahlverfahren in den Leistungsvereinbarungen zu beschreiben. Ob Auswahlverfahren vor Beginn eines Studiums oder erst nach Abschluss einer Eingangsphase vorgenommen werden, ist dabei von zweitrangiger Bedeutung.

Abgesehen von den rein kapazitätsorientierten Auswahlverfahren am Beginn eines Studiums müssen die österreichischen Universitäten allerdings schon aus Gründen der internationalen Wettbewerbsfähigkeit in die Lage versetzt werden, bei Master- und Doktoratsstudium ganz generell eine Auswahl von Studienbewerbern nach Qualifikation vorzunehmen.

Dabei geht es nicht darum, die Zahl der Ausbildungsplätze gegenüber dem Status quo zu reduzieren. Wohl aber muss sich die Bildungspolitik dazu bekennen, dass auch in Österreich Studierende in Zweit- und Drittstudiengängen erst nach entsprechender Überprüfung ihrer spezifischen Eignung aufgenommen werden. Es ist ein Grundprinzip jedes rationalen Hochschulwesens, insbesondere auch des europäischen Hochschulraums, dass die aufnehmende Institution das Recht und die Verpflichtung besitzt, die Studienanfänger auszuwählen.

3 Begabungsreserven nutzen

Die österreichische Hochschulpolitik sollte sich nicht nur darauf beschränken, die Zugangsfragen adäquat zu lösen. Aus einer Reihe von Gründen, die vom politischen Prinzip der Gleichheit bis zur Wettbewerbsfähig-

keit der österreichischen Wirtschaft reichen, wird es notwendig sein, mehr junge Menschen als bisher in das tertiäre Bildungssystem zu bringen. Dieses Bestreben kann allerdings nur dann erfolgreich sein, wenn die soziale Selektivität des Bildungssystems insgesamt abgebaut wird.

Es ist empirisch erwiesen, dass die soziale Selektivität des österreichischen Bildungssystems nicht durch den freien Hochschulzugang im Alter von 18 Jahren gesichert, sondern vielmehr durch die Selektivität des Sekundarschulsystems im Alter von 10 Jahren gefährdet ist (vgl. Lassnigg, 2007, S. 377, 408). Die österreichische Rektorenkonferenz tritt daher dafür ein, kurzfristig alternative Zugangsmöglichkeiten zu Universitäten – die auch jenseits der Matura ange-

legt sein können – auszubauen und diesen Zugang in der Hochschulautonomie besser auszugestalten, als das bisher der Fall war. Auf diese Art und Weise könnten insgesamt höhere Bildungsbeteiligungsquoten bzw. Absolventenquoten trotz Regulierung des Hochschulzugangs erreicht werden.

Schließlich sollte nicht übersehen werden, dass die Selektivität des Sekundarschulsystems im Alter von zehn Jahren begabte junge Menschen von einer Hochschulbildung abhalten kann, auch wenn die Durchlässigkeit etwa der Hauptschule zu den höheren Schulen der 15–18-Jährigen in einem formalen Sinn gewährleistet ist. Die Einräumung von Formalrechten stellt zwar eine notwendige, bei weitem aber keine hinreichende Bedingung für den Abbau von Schranken in der Bildungsbeteiligung dar.

Insgesamt leidet das österreichische Bildungssystem an der Paradoxie, im Alter von zehn Jahren eines jungen Menschen selektiv zu sein, um sich danach im Alter von 18 Jahren des freien Hochschulzugangs zu rühmen. Sinnvoll wäre die Umdrehung dieser gleichsam auf den Kopf gestellten Bildungspyramide: Das Sekundarschulsystem sollte so frei wie möglich sein, im Hochschulsystem ist beim Eintritt (also auf der Bachelorstufe) die Freiheit soweit wie irgendwie möglich zu erhalten. Die formale Einräumung des freien Hochschulzugangs bei unadäquater finanzieller Ausstattung der Universitäten schafft jedoch einen Zustand, der an Unehrlichkeit kaum zu übertreffen ist und überdies die sozialen Barrieren des Bildungssystems nicht abbaut, sondern perpetuiert.

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Von der INPUT- zur OUTPUT-Orientierung

Eine bildungspolitische Herausforderung für die nächsten Jahre

Maria Theresias *„Allgemeine Schulordnung für die deutschen Normal-, Haupt- und Trivialschulen“* – 1774 auf Vorschlag von Abt Felbiger eingeführt – begründete in Österreich ein für die damalige Zeit sehr fortschrittliches, sechsjähriges Pflichtschulsystem. Hundert Jahre später verbesserte Kaiser Franz Josef 1869 im *Reichsvolksschulgesetz* dessen Qualität deutlich, u. a. durch Verminderung der Klassenschülerzahl auf maximal 80, die Ausweitung der Schulzeit auf acht Jahre, die Einführung der ersten Lehrerbildungsanstalten und der dreijährigen Bürgerschule (auch für Mädchen); ein staatliches Inspektionssystem sollte für die Einhaltung der Vorschriften und eine einheitliche Qualität sorgen. Diese umfassende Schulreform wurde übrigens von einem politischen Schock ausgelöst – dem militärischen Desaster von Königgrätz gegen die Preußen 1866: Ein wesentlicher Grund der Niederlage soll nämlich die hohe Analphabetenrate im österreichischen Heer gewesen sein.

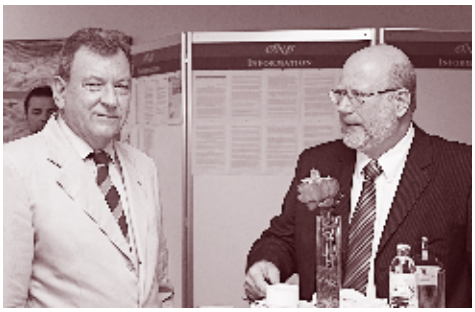
Die grundsätzliche Konstruktion des Schulsystems wurde durch die *Eingliederung in die staatliche Bürokratie des Habsburgerreiches festgelegt* – was bis heute nachwirkt: Schulen wurden Teil der Hierarchie, des erprobten Zentralverwaltungssystems. Die „Einberufung der Schüler“ folgte daher dem Muster militärischer Rekrutierung nach Altersjahrgängen. Zielvorgaben, Arbeits- und Ressourcenzuteilung in den Schulen waren streng hierarchisch aufgebaut, der Lehrer bildete die unterste ausführende Instanz einer fein abgestuften Bürokratie vom Ministerium über Landes- und Bezirksbehörden bis zum Schulleiter. Ein solches Zentralverwaltungssystem schafft eine rasche und flächendeckende Gleichversorgung an Ressourcen für viele Schulen – was in der Aufbauphase unter Maria Theresia, Josef II. und Franz Josef auch entsprechend wichtig war.

Als Folge dieser Konstruktion wurden aber zunehmend *alle Bereiche der Schule streng verrechtlicht* – da Lehrer als Staatsorgane nach „Weisungen“ handeln, mussten möglichst für jede denkbare Vorgabe und jede auszuführende Handlung entsprechende Vorschriften durch das Ministerium geschaffen werden. Insbesondere im vergangenen Jahrhundert führte dies zu einer wahren Flut an Gesetzen und Verordnungen, in denen versucht wurde, jedes verwaltungsmäßig irgendwie erfassbare Detail zu regeln, zum Teil auch im pädagogischen Bereich. Die Komplexität des Systems stieg, Doppelgleisigkeiten nahmen zu (Bund – Länder – Bezirke – Gemeinden) und zersplitterte Kompetenzen verursachen zunehmend Probleme bei Veränderungen, wirken reformhemmend.

Lehrer und Schuldirektoren mussten stets bestrebt sein, gesetzlich „richtig“ vorzugehen, alle Vorgänge rechtlich zu dokumentieren, um sich für den Fall der Fälle abzusichern. Das Unterrichtsministerium bestand folgerichtig vorwiegend aus Juristen, die weiter an diesem Regelwerk feilten, auch im ureigenen Interesse der Arbeitsplatz- und Machterhaltung. Erst Otto Glöckel holte in der Zwischenkriegszeit erstmals eine gewisse

Zahl an Pädagogen und Erziehungswissenschafter als Gegengewicht in leitende ministeriale Ämter.

Der entscheidende Punkt aber ist: Die *Qualitätskontrolle* in einem solchen bürokratischen System erfolgt seit jeher dadurch, dass die Einhaltung der Vorschriften (z. B. der Lehrpläne), die Führung der Amtsschriften und die Verwendung der Ressourcen geprüft werden – großteils unabhängig von allfälligen pädagogischen Ergebnissen des Lehrers, der Klasse, der Schule. Ein solches Vorgehen wird im Allgemeinen als



INPUT-Kontrolle bezeichnet. Ein typisches Beispiel aus der jüngsten Zeit ist die gerichtliche Verfolgung einer Salzburger Schuldirektorin, weil sie Kindern mit sonderpädagogischem Förderbedarf bereits vom ersten Tag der Anwesenheit an ihrer Schule den Unterricht erlaubte, obwohl die dazu formell notwendigen Bescheide noch nicht rechtskräftig waren. Pädagogisch sicher klug – aber Vorschrift ist Vorschrift, die Direktorin wurde daher auf die Zahlung der Unterrichtskosten dieser Schüler verklagt, von einem vernünftigen Richter inzwischen Gott sei Dank freigesprochen.

Meine sehr geehrten Damen und Herren: Das von Maria Theresia vor mehr als zwei Jahrhunderten geschaffene System ist in wesentlichen Strukturen heute noch immer wirksam – seit vielen Jahren wird von der österreichischen Politik ein Umbau der komplizierten und mehrgleisigen bürokratischen (und teuren) Zentralverwaltung durch eine Verfassungsreform versprochen, ein eigener Konvent hat sich sogar damit beschäftigt. Alles bisher ohne nennenswerte Ergebnisse.

Warum ist diese Tatsache problematisch und wo liegen die Herausforderungen?

Problem 1: Keine objektive Prüfung des *OUTPUTS*, der Unterrichtsergebnisse

Die durch den Unterricht von den Schülern nachhaltig erworbenen Kompetenzen *(OUTPUT)*, werden in diesem verwaltungs- und inputorientierten System bisher wenig bis gar nicht beachtet. Berechtigungen werden intern vergeben, aufgrund von isolierten Urteilen (Noten) von Lehrern in Schulklassen, in einzelnen Schulen. Die vergebenen Noten und Berechtigungen spiegeln aber nur die *jeweilige soziale Norm in den Klassen* wider und sind hochgradig anfällig, sowohl für ungleiche Standards bei den Lehrern als auch für die Anpassung der Berechtigungen bei äußerem Druck. So führt etwa der Selektionsdruck der AHS-Entscheidung im Halbjahr der 4. Klasse in manchen Schulen und bei manchen Lehrern zu immer mehr Zeugnissen mit lauter „Sehr gut". Andererseits zeigten die standardisierten Tests der PISA-Studie, dass Schüler, die auf derselben mittleren Niveaustufe 4 im Test lagen, sich zu jeweils einem Drittel auf die Noten „Sehr gut/Gut", zu einem Drittel auf „Befriedigend" und zu einem Drittel auf „Genügend/Nicht genügend" verteilten. Was die Aussagekraft von Noten mehr als relativiert.

Folgen: Niemand kennt bisher die wirklichen, nachhaltigen Leistungen der Schüler – weder die Lehrer, noch die Schulaufsicht noch das Ministerium. Und niemand weiß z. B., inwieweit wichtige Standards in den Grundkompetenzen von Schülern und Schülerinnen tatsächlich erreicht werden und wie erfolgreich oder effektiv (oder produktiv) das Schulsystem ist. Ohne dieses Wissen ist aber keine gezielte Qualitätsentwicklung möglich.

Daher ist der Schock dann umso größer, wenn internationale Vergleiche wie etwa PISA erstmals erahnen lassen, dass es massive strukturelle Probleme gibt, wenn den Schülern bestenfalls mäßige bis durchschnittliche Kompetenzen in praktisch allen untersuchten Fächern bescheinigt werden. Dabei gehört unser Schulsystem zu den teuersten der Welt.

Gleichzeitig werden *gleiche* Berechtigungen (Zeugnisse) an Schulen desselben Typs (mit demselben Lehrplan) für *völlig unterschiedliche* Leistungen vergeben – was zu schwerwiegender Benachteiligung und großer Ungerechtigkeit führt. Bildungs- und Karrierechancen hängen dann eher damit zusammen, welche Schule welches Niveaus ein Schüler besucht, als welche Leistungen er dort objektiv erbringt. Dies entwertet Zeugnisse langfristig enorm und wird möglicherweise auch bald dazu führen, dass nicht wie bisher die Abgeberschulen über die weitere Laufbahn entscheiden, sondern die Aufnehmer (z. B. durch eigene Aufnahmetests).

Herausforderungen: Auf allen Ebenen (Klasse, Schule, Schulsystem) ist es notwendig, sich objektive Informationen über den *OUTPUT* zu verschaffen, also inwieweit die vorgegebenen Ziele erreicht bzw. nicht erreicht werden und von welchen Schülern. Dazu müssen die Kernziele so klar definiert werden, dass sie überprüfbar sind – solche *Bildungsstandards* für die Schnittstellen 4., 8. und 12. Klasse sind bereits seit vielen Jahren in Arbeit. In den nächsten Jahren soll die *OUTPUT-Qualität* aller Schulen daran sorgfältig geprüft und rückgemeldet werden – dazu soll ein eigenes, möglichst unabhängiges *Bundesinstitut* bzw. eine *Qualitätsagentur* gegründet werden. Auf jeder Ebene soll Rechenschaftspflicht bestehen, d. h. bis zu einem gewissen Grad auch Verantwortung für die Ergebnisse übernommen werden. Für die Systemebene ist die Veröffentlichung eines ersten *Nationalen Bildungsberichts* für Ende 2008 angekündigt. Schulen sollten in eigenen *Schulprogrammen* ihre Qualitätsentwicklungsprozesse selbstständig weiterverfolgen. Das wird den Umbau des Systems und die Verschiebung strategisch wichtiger Kompetenzen (z. B. Personalhoheit, Budgethoheit) auf die Ebene der lokalen Schule erfordern („Local Empowerment").

Problem 2: Auch die Beobachtung der Lehr- und Lernprozesse entfällt derzeit faktisch

Eine rudimentäre Kontrolle der pädagogischen Prozesse und ihrer Ergebnisse (also der Qualität des Unterrichts) erfolgt lediglich sporadisch und unsystematisch durch eine Schulaufsicht, die sich traditionell vollständig *aus der Lehrerschaft selbst rekrutiert*. In Österreich ist es inzwischen sogar generell Usus, dass Schulinspektoren ehemalige Personalvertreter der jeweiligen Bezirke

und Länder sind. Und deren allfällige Besuche im Unterricht werden n der Regel mehrere Tage, ja Wochen vorher angekündigt. *Das gleicht dem Abfahren Potemkinscher Dörfer.*

Folgen: Nur sehr wenige Schulaufsichtsbeamte verfügen über systematische Informationen über die Qualität des Unterrichts an den Schulen ihres Bereichs. Auch wissenschaftliche Studien, die die Qualität der Unterrichtsprozesse repräsentativ erfassen könnten, sind hierzulande weitgehend unbekannt. So kann niemand auch nur annähernd angeben, in welchem Ausmaß z. B. *individualisierter Unterricht* in den Klassen stattfindet (auch wenn er gesetzlich vorgeschrieben wäre), in welchem Ausmaß der alte Frontalunterricht dominiert oder wie viel Unterrichtszeit in den Schulen entfällt. Das erschwert die Analyse erkannter *OUTPUT-Schwächen* und verhindert wirksame, zielgerichtete Qualitätsentwicklungsprozesse.

Herausforderungen: Um die *OUTPUT-Qualität* systematisch verbessern zu können, müssen mehr Informationen über die Praxis der Lehr- und Lernprozesse und ihre Organisation vorliegen und es bedarf regionaler Pädagogischer Zentren zur Unterstützung der Schulen. Eine Umstellung der gesamten Schulaufsicht ist notwendig – *überregionale Inspektorenteams* sollen sich ein bis zwei Wochen lang an einer Schule aufhalten und umfassende Informationen sammeln, die sie dann sorgfältig gemeinsam mit den Schulpartnern analysieren und die in die systematische Schulprogrammentwicklung der Schulen einfließt. *Regionale Unterstützungsnetzwerke* müssen dort eingreifen, wo Schulen aus eigener Kraft solche Qualitätsverbesserungen nicht in Gang setzen können.

Auch diese Entwicklung bedeutet eine schrittweise Verlagerung zentraler Entscheidungen und Aufgaben in die Kompetenz regionaler Stellen oder direkt an die Schulen – und eine Abkehr vom derzeitigen System.

Claudia Schmied

Bundesministerin für Unterricht, Kunst und Kultur

Bildungspolitik im 21. Jahrhundert

Premieren sind meist aufregend und verursachen Freude. Bei der Volkswirtschaftlichen Tagung der Oesterreichischen Nationalbank teilzunehmen ist für mich eine besondere Freude.

Mein Beitrag konzentriert sich auf bildungspolitische Schwerpunkte, in Verbindung zur wirtschaftlichen Entwicklung und zu den Vernetzungen, die stark vom Bildungsbereich ausgehen. Seit vielen Monaten ist die österreichische Bildungslandschaft wieder in Bewegung gekommen. Und zwar durch eine intensive öffentliche Debatte, weil diese Bundesregierung wieder offensiv in den Bildungsbereich investiert. Im Doppelbudget 2007/08 sind Sondermittel für bildungspolitische Maßnahmen in der Höhe von 200 Mio EUR budgetiert. Geld ist im Bildungssystem einerseits ein unverzichtbarer Bestandteil, weil es unter anderem auch um die Finanzierung vor allem der Lehrer und Lehrerinnen geht, andererseits sind aber auch qualitative, pädagogische Maßnahmen wichtig.

Bildung ist für mich *das* Zukunftsthema schlechthin und umso mehr freue ich mich bei bildungspolitischen Anstrengungen über einen sehr starken und kompetenten Partner in Form der Industriellenvereinigung. Das Zukunftsprogramm der Industriellenvereinigung „Zukunft der Bildung – Schule 2020" beinhaltet sehr viele solcher bildungspolitischer Ansatzpunkte und Akzente, die sich zum Teil mit dem Regierungsprogramm decken. Viele der Maßnahmen erfordern eine intensive Kraftanstrengung, um Veränderungen gerade auch in einem über Jahre sehr stabilen System durchsetzen zu können. Starke Partner auf nationaler und internationaler Ebene sind dabei unerlässlich. Aus meinen bisherigen Erfahrungen verknüpfe ich Bildung ganz eng mit Innovation, mit Management, mit Leitung und mit der Frage, wie in komplexen Systemen möglichst viel erreicht werden kann.

Angereichert und bereichert wird das Bildungsthema dabei durch den großen Impuls, der von Kunst und Kultur und von der Kreativität kommt.

In Zukunft möchte ich den Zusammenhang von Innovation und Kreativität noch viel stärker betonen. Bildungspolitik ist Gesellschaftspolitik und damit auch ganz stark Wirt-

schaftspolitik, weil es letztendlich um Arbeitsplätze geht. Gerade in globalisierten Zeiten stellen Innovation und Weiterentwicklung von Wirtschaftsräumen den Schlüssel und damit den Weg in die Zukunft dar.

Es geht um zusätzliche und vor allem aber um bessere Arbeitsplätze. In den Mittelpunkt müssen wir dabei immer folgende Fragen stellen: Wie kommen wir zu Spitzenleistungen? Wie gelingt es, möglichst viele Begabungen und Talente der Kinder zu entdecken, zu fördern und zu fordern? Gleichzeitig gilt es aber auch vom Zugang einer solidarischen Gesellschaft her auch achtsam mit Benachteiligungen und Schwächen umzugehen.

Es ist Faktum, dass sich die Gesellschaft radikal verändert. Heute

stehen wir vor ganz anderen Herausforderungen als noch vor zehn oder zwanzig Jahren. Themen, wie die Anforderungen verschärfter globaler Konkurrenz in der Wirtschaft – oder Strukturänderungen der Gesellschaft – sind immer stärker auch an der Schule spürbar und gewinnen daher immer mehr an Relevanz.

Gewalt in der Schule, soziale Probleme und Ähnliches sind Themenstellungen, die am Ort Schule jeden Tag auftreten und deren Wurzeln und Hintergründe gesellschaftliche Dimensionen haben. Daher ist es für mich von entscheidender Wichtigkeit, Bildungspolitik nicht nur als Schulpolitik, sondern auch als Gesellschaftspolitik zu thematisieren.

Die breite öffentliche Debatte ist dabei sehr wichtig. Seitens des Ministeriums werden die entsprechenden Rahmenbedingungen geschaffen. Es wird aber vor allem darum gehen, Schlussfolgerungen zu ziehen, Entscheidungen zu treffen und diese auch umzusetzen.

In den ersten vier Monaten konnte ich – nicht zuletzt durch die enge Kooperation mit dem Finanzministerium – einiges erreichen. Eine Vielzahl von Projekten steht vor der Umsetzung; beispielsweise erreichen wir mit Beginn des Schuljahres 2007/08 durch das groß angelegte Projekt „Senkung der Klassenschülerzahl in Richtung 25“ mehr Zuwendung für die Schülerinnen und Schüler.

Das soll der erste Schritt in Richtung mehr Qualität sein. Diese Maßnahme wird von einem pädagogischen Konzept begleitet, das vor allem Teamunterrichtung, Entdecken von Talenten und Begabungen fördert. Das Projekt erfordert große logistische Anstrengungen. Allein wenn man bedenkt, dass insgesamt ca. 5.600 Schulstandorte existieren, kann man sich vorstellen, wie viel hier an Vorbereitung zu leisten sein wird.

Bereits im September 2007 starten wir in den ersten Klassen an den Pflichtschulen und in den Gymnasien. Gleichzeitig werden wir bessere Förderung bei Fremdsprachen durch mehr Kleingruppenunterricht umsetzen, um so die Herausforderungen durch die Internationalisierung besser zu bewältigen. In der neunten Schulstufe kommt ein besonderer Schwerpunkt im Deutschunterricht hinzu, wo es ebenfalls kleinere Gruppen geben wird.

Wesentlich erscheinen mir in diesem Zusammenhang auch die Erhöhung der Anzahl der Tagesbetreuungsplätze um 27.100 und ein großes Projekt, nämlich die Verbesserung der Ausbildung, vor allem aber die Fortbildung der Lehrerinnen und Lehrer.

Im Oktober 2007 beginnen die Pädagogischen Hochschulen mit neuen Lehrplänen. Mein Hauptaugenmerk liegt vor allem im Bereich der Didaktik, Sozialkompetenz und Demokratieentwicklung. Es ist das der erste Schritt der Zusammenführung der Lehrer- und Lehrerinnenausbildung. Hier wird noch sehr viel Arbeit vonnöten sein, vor allem im Hinblick auf die Übergänge zu den Universitäten.

Im Bildungssystem sehe ich motivierte Lehrerinnen und Lehrer als Schlüssel zum Erfolg. Dieses Themenfeld geht weit über Debatten von Bezahlungen bzw. Zulagen für Lehrer hinaus. Hier geht es vor allem um Image und damit um den Stellenwert der Lehrerinnen und Lehrer in der Gesellschaft. Nur wenn die Motivation im Klassenzimmer und die Begeisterung gut gelingen, werden letztlich

auch Weichenstellungen für die Zukunft gelegt.

Im Regierungsübereinkommen wurde vereinbart, dass sich eine Expertengruppe über die Schule der Zukunft und zukünftige Schulmodelle Gedanken machen soll. Diese Expertengruppe wird die breite öffentliche Debatte entsprechend begleiten.

Die zweite Maßnahme, die in Vorbereitung ist, ist die „Neue Mittelschule". Ziel ist, im Schuljahr 2008/09 mit drei bis vier Modellregionen zu starten, neue Modelle und neue pädagogische Ansätze zu erproben, vor allem aber vom ersten Augenblick an auch die Gesellschaft zu informieren, wie der Unterricht an diesen Schulen stattfindet, wie Individualisierung und innere Differenzierung tatsächlich gelingen kann.

Ein weiteres Thema ist die Frage der Institutionen-Ökonomie: Konkret geht es dabei darum, wie das österreichische Bildungssystem aufbauorganisatorisch besser ausgerichtet werden kann. Dabei geht es mir primär um die Kompetenzaufteilung zwischen Bund, Ländern und Gemeinden.

Mitte 2007 wird die Debatte mit besonderem Augenmerk auf Verantwortung, Kompetenz und Bezahlung beginnen müssen, damit klare, strukturelle Ausgangsbedingungen vorhanden sind, um das Gesamtsystem Bildung neu auszurichten. Bei all den Strukturdiskussionen und Finanzierungsfragen ist aber das Allerwichtigste, immer die Schüler und Schülerinnen in den Mittelpunkt der Betrachtung zu stellen, denn wenn Bildung und Motivation für Kunst und Kultur im Sinne der kulturellen Bildung gelingt, kann für die zukünftige Entwicklung der Gesellschaft viel Gutes erreicht werden!

Veit Sorger

Präsident der Industriellenvereinigung

Bildungspolitische Visionen für Österreich

Die Europäische Union hat im Rahmen des Lissabonprozesses Innovation ins Zentrum der strategischen Überlegungen gerückt. *Bildung und Innovation* zählen gemeinsam mit Forschung und Entwicklung zu den wesentlichsten Grundlagen für *Wohlstand, Wertschöpfung und Wettbewerbsfähigkeit*.

Die erfolgreiche Innovationspolitik der vergangenen Jahre hat Österreich im Ranking des *European Innovation Score Boards* (EISB) an die respektable 8. Stelle geführt. Der damit verbundene heutige Wohlstand und die hohe Attraktivität unseres Industrie- und Innovationsstandorts basieren auf einem guten Bildungssystem der Vergangenheit. Im internationalen Vergleich zeigt sich mittlerweile jedoch eindeutig, dass das österreichische Bildungswesen zurzeit bei den meisten Benchmarks zwar im guten Mittelfeld, aber in keinem einzigen Bereich im Spitzenfeld repräsentativer Vergleichsstudien liegt. Dies wurde nicht zuletzt durch die PISA-Ranglisten aufgezeigt. Eine der Kernaufgaben lautet daher, Österreich wieder an die Spitze dieser Benchmarks zu führen.

Die Entwicklung Österreichs zu einem attraktiven Innovations- und Wirtschaftsstandort verlangt angesichts neuer Herausforderungen die optimale Entfaltung und Nutzung aller vorhandenen Humanressourcen. Österreich ist ein Land, das über keine natürlichen Rohstoffe verfügt. Daher ist unser wichtigster Rohstoff das *Humankapital*. Der bei entsprechender Förderung entstehende Wissensvorsprung ist für die *Wettbewerbsfähigkeit* unserer Unternehmen entscheidend.

Die *Industriellenvereinung als „Anwältin des Standorts"* engagiert sich in ihrer Tradition und gesamtgesellschaftlichen Verantwortung seit Jahren intensiv im Bildungsbereich und hat wesentliche Initiativen zu den erfolgreichen Reformen im Universitätsbereich und der Errichtung der Fachhochschulen gesetzt.

Aus dieser Position heraus tritt die Industriellenvereinigung nun für eine umfassende, dynamische Neugestaltung des *österreichischen Schulwesens* ein. Die Neuausrichtung soll sich an den Bildungserfordernissen der Gesellschaft, den veränderten Rahmenbedingungen und den Erfordernissen junger Menschen orientieren.

Die Herausforderung liegt in der Schaffung eines l*eistungsfördernden, differenzierten und durchlässigen Bildungssystems*, das sich flexibel an neue Anforderungen anpassen kann. Die Ziele eines neuen Schulsystems sind aus Sicht der Industrieellenvereinigung mehrschichtig und umfassend:

1. Heranbildung und Stärkung einer wertorientierten, ganzheitlichen Persönlichkeit unter Berücksichtigung individueller Talente und Begabungen
2. Sicherung qualifizierten Nachwuchses auf verschiedenen Bildungsstufen für die österreichische Wirtschaft, da eine globale Wirtschaftswelt geänderte und vor allem höhere Anforderungen an alle Menschen stellt, und schließlich
3. Schaffung eines *zeitgemäßen*, künftigen Rahmenbedingungen und Bedürfnissen entsprechenden Bildungskonzepts

Neue gesellschaftliche und wirtschaftliche Rahmenbedingungen, wie die Verschiebung der Erwerbsquote, gestiegene Scheidungsraten, neue Familien- und Partnerschaftsstrukturen, steigende Mobilität, Migration und andere Einflüsse, haben mittlerweile die Bildungsprämissen grundlegend verändert.

Diesen Rahmenbedingungen steht noch immer eine Schulstruktur gegenüber, deren Grundlage die Bestimmungen des *Schulorganisationsgesetzes aus dem Jahre 1962* sind. Galten die Führungsstrukturen und

Qualitätsmodelle in den Sechzigerjahren noch als fortschrittlich, hinken sie nun den Entwicklungen der Zeit erheblich hinterher.

Eine hochkarätig besetzte Steuerungsgruppe der Industriellenvereinigung hat vor diesem Hintergrund gemeinsam mit nationalen und internationalen Bildungsfachleuten das Bildungsprogramm *„Zukunft der Bildung – Schule 2020"* erarbeitet. Das vorliegende Zukunftsprogramm formuliert in ideologisch unabhängiger Art und Weise *sieben Visionen und umfassende Maßnahmen* für eine Schule der Zukunft:

VISION 1

Die „Schule 2020" erkennt und entwickelt Potenziale, fordert und fördert unterschiedliche Begabungen und bereitet unsere Jugend auf die neuen Anforderungen im Leben und Beruf vor. Dies verlangt unter anderem:

- Sichere Vermittlung von Grundkompetenzen, ganzheitlicher Persönlichkeitsentwicklung und Lernen von Kulturtechniken
- Flexible und individuelle Unterrichtsgestaltung mit selbstgesteuertem Lernen unter Einbindung des Erfahrungslernen

VISION 2

Die „Schule 2020" berücksichtigt die veränderten gesellschaftlichen und globalen Rahmenbedingungen:

- Verpflichtendes, staatlich finanziertes Startschuljahr ab dem 5. Lebensjahr
- Leistungsorientierte Differenzierung bei einem gemeinsamen, vergleichbaren Bildungsangebot für alle Kinder und Jugendliche in der Mittelstufe (10 bis 14 Jahre)

VISION 3

Die „Schule 2020" ist ein Kompetenzzentrum für Lehren und Lernen:

- Ausbau und Stärkung der „echten" Schulautonomie
- Personal- und Ressourcenverantwortung für Schulmanager

VISION 4

Lehrer der „Schule 2020" sind als „Architekten der Zukunft" unverzichtbare Schlüsselpersonen und anerkannte Führungspersönlichkeiten:

- Verbindliche Auswahlverfahren und Eignungstests für Lehramtskandidaten zur Feststellung sozialer und kommunikativer Kompetenzen

– Verpflichtende, qualitativ hochwertige Aus-, Fort- und Weiterbildung
– Modernes Lehrerdienstrecht mit attraktiven Angeboten zu Um- und Aufstiegsmöglichkeiten einschließlich leistungsorientierter Bezahlung

VISION 5

Die „Schule 2020" profitiert von einem effizienten und schlanken Bildungsmanagement:
– Bereinigung gesetzlicher Zuständigkeiten
– Konzentration der Steuerung und Verwaltung auf drei Entscheidungsebenen: Bund – Region – Schule

VISION 6

Die „Schule 2020" orientiert sich an führenden internationalen Standards und nachhaltiger Qualitätssicherung:
– Einführung einheitlicher Bildungsstandards und unabhängiger Qualitätssicherung
– Bundesweit vergleichbare Abschlussprüfungen und Zertifizierungen in „Kernbereichen"

VISION 7

Die „Schule 2020" setzt die richtigen Schwerpunkte für das 21. Jahrhundert:
– Verbesserung und Attraktivierung des Fremdsprachenangebots – auch im Hinblick auf regionale Bedürfnisse
– Einführung des Lehr- und Lernthemas *Naturwissenschaft und Technik* (NWT)

Herbert Tumpel

Präsident der Bundesarbeitskammer

Von der Krise in der Bildung zur Strategie des „Lebensbegleitenden Lernens“

Österreichs Bildungswesen ist in einer veritablen Krise. Versäumnisse und fehlende Investitionen in die Hebung der Begabungsreserven wirken langfristig und diese Wirkungen werden sukzessive sichtbar. Ein nicht unbedeutender Teil von Jugendlichen bleibt weiter ohne Ausbildung; viel zu wenige schließen mit Matura ab; Plätze in der Berufsausbildung fehlen. Und Versäumtes nachzuholen ist in Österreich ungewöhnlich schwierig.

Entscheidend für Fortschritte bei Wachstum und Beschäftigung sind gut ausgebildete Facharbeitskräfte, die in einer Wissensgesellschaft am aktuellen Qualifikationsstand sind und so im globalisierten Wettbewerb über hohe Produktivität zum Standorterhalt wesentlich beitragen.

Die Bedingungen im Bildungssystem aber – von der mangelnden Förderung in der Schule über die mangelnde Betreuung an den Hochschulen bis zum geringen Angebot an Weiterbildung für Beschäftigte – stellen derzeit viele Schüler, Studierende und weiterbildungsinteressierte Erwachsene vor sozial bedingte Hürden beim Zugang zum Lernen, zur erforderlichen Qualifikation.

Kompensationsmaßnahmen für öffentliche Defizite (Nachhilfe, Privatschulen, lange Studiendauer, zu wenig staatliche Weiterbildungsförderung etc.) verlangen auch einen hohen Einsatz privater Mittel, was viele vom Lernen ausschließt.

Vier Baustellen charakterisieren den Zustand des österreichischen Bildungswesens.

Baustelle 1: Schulwesen

Österreichs Schulwesen ist dringend reformbedürftig. Die Ergebnisse der PISA-Tests zeigen eindrücklich, dass viele Schüler zum Zeitpunkt der Beendigung der Schulpflicht weit hinter den europäischen Vergleichswerten zurückliegen und ihnen dementsprechend die notwendigen qualitativen Voraussetzungen für einen erfolgreichen Eintritt in den Arbeitsmarkt bzw. in eine weiterführende Ausbildung fehlen.

Dieser Umstand führt dazu, dass rund 80.000 Jugendliche zwischen 20 und 24 Jahren in Österreich keine über die Pflichtschule hinausführende Ausbildung vorweisen können. Aber auch die Zahl jener Schüler, die überdurchschnittliche Leistungen erbringen können, liegt unter dem europäischen Durchschnitt.

Dazu kommt, dass weiterhin strenge soziale Selektion im Schulwesen vorherrscht, was zur Folge hat, dass Kinder aus einkommensschwachen Haushalten deutlich schlechtere Chancen auf höhere Bildung haben und eine Vielzahl von Begabungen der Gesellschaft verloren gehen.

Ein verpflichtendes Vorschuljahr ist aus Sicht der Arbeiterkammer (AK) ein notwendiger entscheidender Schritt, um frühzeitig soziale Defizite auszugleichen.

Baustelle 2: Berufsbildung

Die Möglichkeit zur weiterführenden Ausbildung nach der Pflichtschule wird für Jugendliche immer wichtiger. Ressourcen und Begabungen vieler Jugendlicher werden derzeit verschwendet, indem ihnen zuwenig oder häufig die falschen Ausbildungsplätze angeboten werden. Statt Förderung wird streng selektiert, und in den berufsbildenden Schulen gibt es enorme Drop-out-Raten. Die hohe Jugendarbeitslosigkeit demotiviert breite Teile unserer gesellschaftlichen Zukunftsträger. Die viel zu geringen

Investitionen der letzten Jahre in die Ausbildung der Jugendlichen führen nicht nur unmittelbar bei den Betroffenen zu zahlreichen Problemen, sondern auch mittel- und langfristig für die gesamte Gesellschaftsentwicklung, da Entwicklung und Wohlstand des Landes wesentlich vom Bildungs- und Qualifikationsniveau der künftigen Arbeitnehmer abhängig sind. Die Höhe des erreichten Bildungsniveaus steht in engem Zusammenhang mit individuellen Parametern wie Arbeitslosigkeit oder Einkommen sowie mit generellen wie Innovationskraft einer Wirtschaft.

Der Anpassungsprozess zwischen den Ausbildungsangeboten und den Anforderungen von Wirtschaft und Arbeitsmarkt ist in Österreich ungenügend entwickelt. Starre Schulstrukturen konservieren Ausbildungen im landwirtschaftlichen Bereich, in Textil- und Modeschulen oder im Produktionssektor. Die Ausbildungen im Gesundheits- und Sozialbereich sind den Ländern oder dem Gesundheitsministerium zuzuordnen, es besteht keine durchlässige Verbindung zu den schulischen Erstausbildungsstrukturen. Außerdem mangelt es den Jugendlichen in Österreich durch einen demotivierenden Mathematik- und Naturwissenschaftsunterricht (von allen PISA-Teilnehmerländern haben sie am wenigsten Freude an diesem Unterricht) am Interesse an einer höheren Ausbildung in diesem Bereich (daher: offene Plätze an technischen Fachhochschul-Studiengängen, Rückgang bei den Technikstudierenden an der Universität).

Entscheidend wird sein, ob das Regierungsvorhaben „Ausbildungsgarantie bis 18“, das von Arbeitnehmerseite als besonders wichtig hervorgehoben wurde und wo die Sozialpartner intensivst an konkreten Umsetzungsvorschlägen arbeiten, rasch realisiert werden kann.

Baustelle 3: Universität

Der AK als Arbeitnehmerinteressenvertretung sind besonders die Interessen und Bedürfnisse von berufstätigen Studierenden ein Anliegen: Die letzte Studierenden-Sozialerhebung 2002 hat ergeben, dass rund zwei Drittel aller Studierenden während des Semesters berufstätig sind. Berufstätige Studierende sind bekanntlich eine „bunte Mischung“: Viele nehmen im Lauf des Studiums eine Berufstätigkeit auf, es gibt aber auch zahlreiche Arbeitnehmer, die ein Studium mit der Motivation „Höherqualifizierung“ beginnen. Studierende

aus sozial schwächeren Schichten sind in einem höheren Ausmaß berufstätig.

Die Studienbedingungen für berufstätige Studierende sind vielfach trist. Bei einer AK-Umfrage an vier großen Universitäten hat nur jeder Sechste angegeben, dass auf Studierende, die nebenbei arbeiten müssen, Rücksicht genommen wird. Eigene berufsbegleitende Studiengänge, die im Fachhochschulbereich rund ein Drittel ausmachen, gibt es auch in großen Studienrichtungen mit vielen erwerbstätigen Studierenden nicht.

Fehlendes Lehrveranstaltungsangebot, problematische Öffnungszeiten von Instituten, mangelnde Erreichbarkeit von Lehrenden, rigide Anwesenheitspflichten bei Bachelorstudien, unzureichende Stipendien etc. behindern Studierende am Fortkommen beim Studium und verhindern die Aufnahme eines Studiums für berufstätige Interessierte.

Die Folgen all dieser Hürden sind bekannt: Lange Studiendauer und hohe Dropout-Raten sind seit langem ein wenig rühmliches Kennzeichen des österreichischen Universitätssystems. Insgesamt ist Österreich bei der Ausbildung von Hochqualifizierten im Vergleich zu anderen OECD-Ländern zurückgefallen. So konnte Österreich den Anteil von Hoch- und Fachhochschulabsolventen (Tertiärbereich A) pro Jahrgang zwischen 2000 und 2004 von 16,0 % auf 19,6 % steigern. Die meisten OECD-Länder machten aber weit größere Fortschritte, sodass im OECD-Durchschnitt mittlerweile 34,8 % eines Jahrgangs einen Abschluss im Tertiärbereich A vorweisen können (OECD-Durchschnitt im Jahr 2000 bei 27,5 %). Mittlerweile bildet im OECD-Raum somit nur noch die Türkei weniger Akademiker pro Jahrgang aus als Österreich.

An den Universitäten und im Wissenschaftsministerium ist aus AK-Sicht zentrales Anliegen, dass die Unterstützung der Vereinbarkeit von Beruf und Studium (Anrechnung von Berufserfahrung; Fernlehre; ...) an die Spitze der Reformprioritäten rückt.

Baustelle 4: Weiterbildung von Arbeitnehmern

Entscheidend für Fortschritte bei Wachstum und Beschäftigung sind gut ausgebildete Facharbeitskräfte, die in einer Wissensgesellschaft am aktuellen Qualifikationsstand sind und so im globalisierten Wettbewerb über hohe Produktivität zum Standorterhalt wesentlich beitragen.

Weiterbildung führte in den letzten Jahren ein Schattendasein auf der politischen Agenda. Angesichts der demografischen Entwicklung (Alterung der Gesellschaft) und dem Umstand, am Arbeitsmarkt nur mehr mit aktuellen Qualifikationen ausgestattet bestehen zu können, sind Investitionen in die Weiterbildung von Arbeitnehmern heute zentral geworden.

Österreich liegt im europäischen Vergleich weit hinter den führenden Nationen zurück: Arbeitnehmer in Österreich können in ihrem Berufsleben 422 Stunden an berufsbezogener Weiterbildung erwarten, in Dänemark dagegen 934 Stunden, in der Schweiz 723 Stunden und in Frankreich 713 Stunden.

Privat wenden die Österreicher für ihre Weiterbildung in Summe 800 Mio EUR im Jahr auf. Die Be-

triebe zahlen für die Weiterbildung ihrer Beschäftigten in Summe 907 Mio EUR im Jahr.

Bescheiden wirken dagegen die Ausgaben der öffentlichen Hand für Weiterbildung: Bund, Länder und Gemeinden kamen im Jahr 2004 zusammen auf 297 Mio EUR für die Förderung der Weiterbildung – das entspricht 2,3 % der gesamten öffentlichen Bildungsausgaben. Wobei mehr als die Hälfte der öffentlichen Aufwendungen für Weiterbildung in die Schulen für Berufstätige fließen (166,1 Mio EUR).

Schweden (Bund und Kommunen) gibt 9,1 % seines öffentlichen Gesamtbildungsbudgets für die Erwachsenenbildung aus (2005), dieser Prozentsatz liegt viermal über dem von Österreich und in absoluten Ziffern sind das beeindruckende 2,042 Mrd EUR (ohne Arbeitsmarktservice), also siebenmal soviel (und zwar bei gleicher Einwohnerzahl) wie die öffentliche Hand in Österreich aufwendet!

Und es fehlt an Unterstützung und Initiativen, die es Arbeitnehmern möglich machen, auch die Zeit für Weiterbildung aufzubringen. Geschieht die Weiterbildung nicht im Betrieb, was tendenziell nur für hochqualifizierte jüngere Arbeitnehmer wahrscheinlich ist, muss die Weiterbildung neben der regulären Arbeitszeit geschehen, was angesichts familiärer Verpflichtungen, langer Anfahrtswege zum Arbeitsplatz, flexibler Arbeitszeiten etc. immer schwieriger wird.

Wie in Vorbildländern seit Jahrzehnten üblich, muss auch in Österreich das Nachholen von Bildungsabschlüssen bis zur Matura aus AK-Sicht gebührenfrei möglich sein, damit Versäumtes rasch nachgeholt werden kann.

Schlussfolgerungen

Ein „Haus des Lebensbegleitenden Lernens“ – durch die Entwicklung und Umsetzung einer kohärenten Gesamtstrategie zum Lebensbegleitenden Lernen – muss geschaffen werden.

Diese Strategie benötigt klare Ziele, einen Zeitplan, die Einbeziehung aller relevanten Akteure und die kontinuierliche Evaluierung ihrer Umsetzung.

Vorrangiges Ziel dieser Strategie muss es sein, die Bildungschancen für alle ohne soziale Zugangsbarrieren zu sichern. Wenn das Bildungssystem von Anfang an allen Kindern und Jugendlichen die Möglichkeit zur Entwicklung ihrer Begabungspotenziale (Hebung von Begabungsreserven) bietet, wird die Grundlage für eine Verbesserung des Bildungsniveaus und für eine Höherqualifizierung der zukünftigen Beschäftigten gelegt.

Alle von dieser Bundesregierung zu setzenden Bildungsmaßnahmen müssen das Ziel haben, den breiten Zugang zur Bildung zu fördern und auszubauen. Auf diese Weise könnten die Mittel, die zur Zeit für „Reparaturmaßnahmen“ zu einem späteren Zeitpunkt (z. B. Hauptschulabschlusskurse; Wiederholen) aufgewendet werden, verringert werden.

Neben der Zuführung zusätzlicher Mittel zur Sicherstellung einer guten Umsetzung der angegebenen Ziele muss es durch Strukturreformen gelingen, Umschichtungen zugunsten der vorgesehenen Reformmaßnahmen durchzuführen.

Eine Bildungsstrategie muss sich an klaren Vorgaben orientieren. Für die AK sind folgende Benchmarks entscheidend, damit Bildung nachhaltig Wachstum und Beschäftigung unterstützt:

– Anhebung des Anteils der Jugendlichen mit positivem Pflichtschulabschluss: Ziel: Halbierung des Anteils Jugendlicher ohne positiven Abschluss auf 2 % eines Jahrgangs
– Anhebung des Anteils Jugendlicher mit abgeschlossener weiterführender Ausbildung auf über 90 % der 20- bis 24-Jährigen
– Anhebung des Maturantenanteils auf 50 %
– Anhebung des Akademikeranteils auf den OECD-Durchschnitt
– Anhebung des Anteils von Frauen mit Abschlüssen in naturwissenschaftlich-technischen Ausbildungen
– Verdoppelung der Beteiligungsquote bei Weiterbildung

Josef Christl
Executive Director
Oesterreichische Nationalbank

Concluding Remarks

Ladies and Gentlemen, I think that our discussions yielded a number of interesting insights. Let me summarize just a few of them: We currently face a double economic challenge in Europe. First, productivity growth and hence economic growth remains subdued in Europe. Second, the challenge of globalization will entail structural adjustments and potential job losses. In addition, we need to fight poverty and stimulate growth in developing countries by using demographic windows of opportunity.

For all these problems, boosting human capital via appropriate education policies can be part of the answer. In particular, we observe the following empirical regularities:

Macro- and microeconomic evidence shows that the quantity and quality of education contribute substantially to productivity growth and thus economic growth, e.g. via increased development and widespread use of innovations and advanced technologies. In estimations presented today, the elasticity of output with respect to the stock of human capital is almost certainly above 0.5, almost 50% higher than previous estimates. As a consequence, knowledge is replacing physical capital as the main driver of economic growth.

Educational attainment does not only matter for economy-wide productivity growth, but also for the employability of individuals – employment rates correlate with levels of educational attainment. Indeed, a solid educational base coupled with lifelong learning is probably the best way to cope with the challenges of globalisation. It provides the means to quickly change jobs and move out of unemployment or jobs which are threatened by new competitors.

As countries approach the so-called technological frontier, tertiary education becomes more important than primary or secondary education, as it fosters the adoption of advanced technologies and develops general skills which can be taken from one job to the next. Needless to say, broad levels of participation in tertiary education need high quality pre-school, primary and secondary systems.

Education matters also for monetary policy because it raises the speed

limit of an economy by increasing productivity growth and labor utilization; and because it increases labor mobility, which is crucial in a monetary union to deal with asymmetric shocks.

A particular aspect of education, financial education, is both a critical component of a robust and effective financial system, and thus also for productivity growth; and for the inclusion of large parts of the population into the benefits offered by various financial products. It can also be seen from a consumer protection perspective.

Last, but not least, human capital is key for poverty reduction and growth in developing countries. The current cohort of 12 to 24-year-olds

is the largest in history, but it is also better educated and healthier. This is a strong base on which to build further efforts for an acceleration of economic growth and a crucial opportunity which should be used before ageing sets in.

Do the current education systems in Europe exploit these potential benefits of education? As we have heard during the discussion, European education systems are on the whole – with exceptions – characterized by a focus on vocational rather than general skills, which fosters quick inte-

gration into the labor market, but which slows the adoption of new general purpose technologies and reduces labor market mobility. Vocational skills are also more prone to quick outdating and would thus require increased lifelong learning, but with the exception of a few countries, we do not see high levels of lifelong learning. In terms of levels of educational attainment, secondary education systems are alright on average, with large country variation.

The big problem is seen with tertiary education, both in terms of quantity and quality. In Europe on average, we observe much lower participation in tertiary education than in the U.S.A. There are fewer top European universities, although many existing universities are of a good average quality. We face problems with the scientific training of graduates and declining numbers of science and engineering students, as well as generally low spending on tertiary education and a national fragmentation of systems.

Which policies have been suggested to deal with these problems?

In secondary education systems, care should be taken to increase the efficiency of public spending on education. The PISA study shows that very different overall scores are achieved with comparable amounts of public spending.

Concerning higher education, the "massification" of higher education in Europe over the last decades implies a diversification of the university system – democratic at the base, but elitist at the top. So far, this is not happening, there are few top universities in Europe, leading to brain drain and unused human potential. Public investment, but particularly private investment in universities should be increased to reach the Lisbon Agenda's 2% GDP-goal of investment in tertiary education. To this end, income-contingent loans can be introduced to enable higher and differentiated tuition fees which would also foster competition among universities; an alternative is more European-level funding, integrated into a European area for higher education.

In the area of lifelong learning, the European Commission stresses an integrated approach where traditional activation and social policies are complemented by policies that promote human capital over the entire life time. This would also promote job flexibility with individual financial security.

As regards the Austrian education system in particular, the discussants agreed on the observation that we do not use our potential. To get back to the top of education benchmarks, a concept for the education system as a whole is needed, including a compulsory pre-schooling year and improved secondary education. There is now widespread consensus on the beneficial effects of increased school autonomy in reaching – yet to be established – nationwide school performance standards. In order to broaden participation in tertiary education, a reduction of the social selectivity of the Austrian school system will be necessary. Austrian higher education needs a better coordination between its different components, as well as reformed access and increased graduation ratios.

In all of these areas, we can learn a lot from others, empirical research results are now readily available for almost every area of the education system. This is an opportunity for policy makers to embark on reform.

In conclusion, we have seen that education and training are very important tools of economic policy. However, they need to be embedded in a comprehensive strategy which also tackles product, labor market and capital market reforms, as well as the sustainability of public finances and better regulation. In short, we need to push further the Lisbon Agenda, because we are still far away from its goals.

Die Vortragenden
Speakers

Joaquín Almunia

Joaquín Almunia was born in Spain on June 17, 1948. He is married and has to two children. He graduated in Law and Economics at the University of Deusto (Bilbao), studied at L'École Pratique des Hautes Études de Paris, then followed the "Senior Managers in Government" program at the Kennedy School of Government, Harvard University. He is an Associate Lecturer at the University of Alcalá de Henares (Madrid) on Employment and Social Security Law. Mister Almunia started his professional life as economist at the Council Bureau of the Spanish Chambers of Commerce in Brussels (1972–1975). He was then chief economist of the UGT, a Spanish trade union (1976–1979). His first political position was as a Member of the Spanish Parliament in 1979 (he remained a MP until 2004). From 1982 to 1986, Joaquín Almunia was Minister of Employment and Social Security and Minister of Public Administration from 1986 to 1991. He was also Spokesperson of the Socialist Parliamentary Group between 1994 and 1997. Joaquín Almunia then became Leader of the PSOE (1997–2000). Since April 26, 2004, he is a Member of the European Commission, responsible for Economic and Monetary Affairs.

Christoph Badelt

Christoph Badelt, born in 1951, obtained his Ph.D. in economics in 1976. Since 2002, he has been the Rector of the Vienna University of Economics and Business Administration. Before, he was engaged as professor of Economics and Social Policy at the Vienna University of Economics and BA (from 1989, currently on leave). He also was Vice Rector for Infrastructure at the above mentioned university (1998–2002). In addition, Christoph Badelt is the President of the Austrian Rectors' Conference (since 2005). At an earlier time, he worked as Visiting Professor at the University of Klagenfurt, Austria and the University of Wisconsin, Madison, U.S.A. (1981–1982, 1984–1985). His numerous publications include Handbook of Nonprofit Organizations, Social Policy, The Economic Situation of Families in Austria, Evaluation of the System of Care Allowances, Economic Relations between Generations, Costs of Long Term Care, Families between Equity and Discrimination, The Situation of Handicapped in Austria, Supported Employment, Market Incentives in the Public Sector, Political Economy of Volunteering, Economics of Self-Help Groups.

Mario Cervantes

Mario Cervantes is a senior economist in the Science and Technology Policy Division of the OECD. He joined the OECD in 1993 where he worked in the Education, Employment, Labor and Social Affairs Directorate before moving to the Directorate for Science, Technology and Industry. During his years of service at the OECD he has worked on a variety

of issues related to human capital, notably the development of human resources in S&T, international migration of the highly skilled, and researcher careers. He participated in the *OECD Job Study* and the *OECD Growth Project* and has participated as an expert to the European Commission and the World Bank Institute. Mr. Cervantes has authored co-authored numerous reports on S&T policy and human resource issues. His current portfolio of activities includes industry-science relationships, intellectual property and innovation,

and the globalization of R&D and open innovation. He is a graduate of Columbia University in New York and the University of California at Santa Barbara and holds a Diploma from the Institut d'Études Politiques in Paris. In 1988, he was a Sloan fellow at Princeton University's Woodrow Wilson School of Public and International Affairs.

Josef Christl

Josef Christl has been Executive Director of the Oesterreichische Nationalbank since 2003. Moreover, he is Alternate Governor for the Republic of Austria to the International Monetary Fund and Member of the Supervisory Board of the Austrian Financial Market Authority. After two years of serving as an economist at the Ministry of Social Affairs, he worked as Assistant Professor for Economics at the Institute for Advanced Studies in Vienna from 1980 to 1984. After that, he was Senior Economist (1984–93) and Chief Economist (1993–2001) with Creditanstalt-Bankverein. From 2001 to 2003 he served as Chief Economic Advisor to the Austrian Minister of Finance. Since 1992, Josef Christl has been professor at the University of Economics in Vienna. He holds a doctoral degree in economics from the University of Vienna.

Angel de la Fuente

Angel de la Fuente has been a member of the Institut d'Anàlisi Econòmica (CSIC) Barcelona since 1991.His areas of specialization are the economics of growth and regional economics. He is a member of the editorial boards of "Revista Española de Economía" and "Moneda y Crédito" and a CEPR Research Affiliate. In the area of growth economics his recent research has focused on the empirical analysis of the determinants of the rate of economic growth and, in particular, on the impact of investment in human and technological capital (Human Capital and Growth) and on the effects of fiscal policies on growth (Fiscal Policy and Growth in the OECD). He has also analyzed the process of convergence among the Spanish regions (On the Sources of Convergence: a Close Look at the Spanish Regions) and the theoretical and policy implications of the existing empirical evidence on national and regional growth (Convergence and other Tales: Regional Growth from a Neoclassical Perspective, The Empirics of Growth and Conver-

gence: a Selective Review). Other recent papers explore the comparative growth experience of different OECD countries (Real Convergence? Spain in the OECD, and The Sources of Irish Growth, with Xavier Vives), the use of convergence equations as a tool to analyze the dynamics of the international income distribution (Convergence Equations and Income Dynamics) and the possible impact of various instruments of regional redistribution (Some Reflections on the Redistributive Role of Public Investment). Finally, he has completed a textbook on mathematics for economists at Ph.D. level (Mathematical Methods and Models for Economists). In addition, Angel de la Fuente does consultancy work for the European Commission, the OECD, the World Bank, the Spanish Ministry of Finance and several Spanish regional governments.

Wolfgang Duchatczek

Wolfgang Duchatczek has been serving as Vice Governor of the Oesterreichische Nationalbank (OeNB) since 2003. He joined the OeNB in 1976, and the Office of the Governor in 1978. He was appointed Chief of the Office of the Governor in 1982 and Deputy Executive Director of the Foreign Research Department in 1987. In addition, he served as Representative of the OeNB on the EC Integration Committee of the Austrian Federal Government. Mr. Duchatczek was appointed Director of the Area International Relations of the OeNB in 1992 and represented the OeNB during Austria's EU accession negotiations. He was nominated Chairman of the European Commission's Committee on Monetary, Financial and Balance of Payments Statistics (CMFB) and served as the OeNB's Second Alternate on the Committee of Alternates of the European Monetary Institute (EMI). In 1997, he was appointed to the OeNB's Board of Executive Directors as Deputy Chief Executive Director of the Liquidity and Portfolio Management and Internal Services Department, and in 1998 he joined the OeNB's Governing Board as Executive Director of the Money, Payment Systems and Information Technology Department. Mr. Duchatczek holds a

doctorate in economics and social sciences and has been awarded the Grand Decoration of Honor in Gold for Services to the Republic of Austria.

Alfred Gusenbauer

Alfred Gusenbauer, born in 1960, studied political sciences, philosophy and law at the University of Vienna (Ph.D. in 1987). From 1981 till 1990, he was executive secretary for the Socialist Youth of the Social Democratic Party of Austria. Alfred Gusenbauer was Federal Chairman of the Socialist Youth (SJ) from 1984 to 1990 and Vice President of the International Union of Socialist Youth (IUSY) from 1985 till 1989. He then became senior research fellow in the economic policy department of the Chamber of Labor from 1990 to 1999. He has

been Chairman of the Social Democratic Party in the district Melk (Lower Austria) since 1990 and Member of the Austrian Parliament since 1991. Alfred Gusenbauer was Chairman of the Committee for development cooperation of the Austrian Parliament (1996–1999). Since 1991, he has been a Member of the Austrian Delegation to the Parliamentary Assembly of the Council of Europe. In addition to his other obligations, Alfred Gusenbauer was Chairman of the Social, Health and Family Affairs Committee of the Council of Europe

from 1995 to 1998. He was Secretary General of the Social Democratic Party in Lower Austria from 1999 until 2000. Subsequently, Mister Gusenbauer has been the leader of the Social Democratic Group in the Austrian Parliament and leader of the Social Democratic Party of Austria since 2000. He was appointed Federal Chancellor of Austria on January 11, 2007.

Günter Haider

Günter Haider is the National Manager of the International Association for the Evolution of Educational Achievement (PISA). Between 1971 and 1987, Günter Haider completed several teaching training courses: teaching certificate for elementary and secondary schools, teaching certificate for polytechnic secondary schools and teaching certificate for informatics for secondary and polytechnic schools. He worked as teacher in several elementary, secondary and polytechnic schools in Upper Austria and performed as teacher trainer at the Federal Pedagogical Academy from 1983 to 1987. In addition, Günter Haider studied educational science, journalism and communication science at Paris Lodron and the University of Salzburg and obtained his Ph.D. in 1987 (summa cum laude). Subsequently, he has performed as lecturer and assistant professor at the University of Salzburg until these days. His courses focus on research methods, statistics, comparative education, educational research strategies, assessments and computers in schools, system evaluation (TIMSS, PISA). In 1990, he co-founded the Austrian International Association for the Evolution of Educational Achievement (IEA) Research Center Salzburg. The mission of this center is to design and implement large-scale and international achievement assessments in Austria; between 1990 and 1996 Günter Haider wrote all the scientific reports of IEA on comparative education, achievement tests and surveys in large-scale assessments, content related evidence of validity in international assessments. In 1995, he completed his second studies of social psychology, cognitive and applied psychology (Sc. D. summa cum laude).

Jeanne M. Hogarth

Jeanne M. Hogarth is the Manager for the Consumer Education and Research Section of the Division of Consumer and Community Affairs at the Federal Reserve Board. She joined

the Federal Reserve in 1995. Her previous experience includes 7 years of high school teaching, a year on the Extension faculty at the University of Illinois, and 13 years on the consumer economics faculty at Cornell University. During her tenure at Cornell, she was responsible for community education programs related to family financial management and consumer economics through Cornell Cooperative Extension. At the Federal Reserve Board, she is responsible for research and outreach initiatives related to consumer financial services. She manages the Board's consumer information materials on financial services, both in print and on the web. She is the author of numerous scholarly research articles as well as consumer education resources on financial management. Both her research and her consumer education programs have received awards for their excellence. She is the recipient of the AFCPE Mary Ellen Edmondson Educator Award and was named a Mentor and a Distinguished Fellow by the American Council on Consumer Interests. Jeanne M. Hogarth serves on the editorial boards of the Federal Reserve Bulletin, Family and Consumer Sciences Research Journal, Journal of Consumer Affairs, Journal of Consumer Policies. She also serves on advisory boards for the Villanova University Center for Marketing and Public Policy, the Take Charge America Institute for Consumer and Financial Education at the University of Arizona, and the National Forum to Promote Low-Income Household Savings. She is an active member of the American Council on Consumer Interests and the Association for Financial Counseling and Planning Education and she volunteers in the IRS's Volunteer Income Tax Assistance program. Ms. Hogarth received a BS in education from Bowling Green State University and an MS and Ph.D. in family and consumer economics from The Ohio State University.

Emmanuel Jimenez

Emmanuel Jimenez, from the Philippines, has held a variety of positions as an economist and manager in the Policy, Research and Operational units of the World Bank. He is currently Staff Director of the World Development Report 2007 team. Since early 2002, he has also been Sector Director, Human Development, in the World Bank's East Asia Region, where he is responsible for managing operational staff working on education and health issues. Prior to this position, he held a similar position in the Bank's South Asia Region. Before that he served for many years in the Bank's Development Economics Staff, where he managed staff and also engaged in research on a variety of topics, including education and health finance, the private provision of social services, the economics of transfer programs and urban development. He has served both formally and informally on several teams preparing World Development Reports. Before joining the World Bank, Mr. Jimenez was on the faculty of the economics department at the University of Western Ontario in London, Canada.

Klaus Liebscher

Klaus Liebscher is presently serving as Governor of the Oesterreichische Nationalbank (OeNB). Moreover, since the foundation of the European Central Bank (ECB) in June 1998 he

has been an independent member of both the ECB Governing Council and the ECB General Council. He also represents the OeNB at the Bank for International Settlements Governors' Meeting and is Austria's Governor to the International Monetary Fund (IMF). Before joining the OeNB on June 1, 1995 and presiding the General Council of the Bank as its President until August 31, 1998, he started his career at Raiffeisen Zentralbank Österreich AG in 1968, where he was a member of the Executive Board as from 1980 and Chief Executive Offi-

cer and Chairman of the Board from 1988 to 1995. He served as President of the Vienna Stock Exchange Council from 1990 to 1995 and on the supervisory boards of several banks and other corporations in Austria and abroad. Mr. Liebscher earned his law degree (Dr. iur.) from the University of Vienna.

Leslie Julian Lipschitz

Leslie J. Lipschitz became Director of the IMF Institute in December 2003. He joined the IMF in 1974, and during his 30 years of service at the International Monetary Fund has held increasingly senior positions in four area departments (Western Hemisphere, Asian and Pacific, European, and African) and the Policy Development and Review Department (PDR). He received his Ph.D. in economics from the University of London. Lipschitz has worked extensively in Asia, Africa, the United States, and Europe and has led numerous IMF missions. He has participated in the Fund's work on surveillance over the major industrial countries, led program negotiations for both emerging and developing countries, and, most recently, been closely involved in the Fund's policy development work in surveillance and conditionality. Lipschitz has been a guest scholar at the Brookings Institution and has taught at Johns Hopkins University's School of Advanced International Studies. His publications are primarily in open economy macroeconomics and exchange rate policy.

Susanne Lohmann

Susanne Lohmann is a professor of political science and public policy; director of the Center for Governance; and founding faculty member of the Interdisciplinary Degree Program on Human Complex Systems at the University of California Los Angeles (UCLA). Professor Lohmann received her Ph.D. in economics and political economy from Carnegie Mellon University in 1991. She was John M. Olin Fellow at Carnegie Mellon University from 1986 to 1989; Alfred P. Sloan Fellow from 1989 to 1990, also at Carnegie Mellon University; James and Doris McNamara Fellow at Stanford University from 1991 to 1992; John M. Olin Fellow at the University of Southern California in 1996; Fellow of the Center for Advanced Study in the Behavioral Sciences from 1998 to 1999; and Fellow of the John Simon Guggenheim Memorial Foundation from 2000 to 2001.

Professor Lohmann has published extensively on collective action and central banking. Her current research interests include the ethics, governance, administration, and political oversight of human complex systems such as research universities, school systems, academic health centers, and intelligence agencies. She is currently completing a book titled *How Universities Think: The Hidden Work of a Complex Institution*.

Wilhelm Molterer

Wilhelm Molterer, born in 1955, completed his studies of economic sciences at the Johannes Kepler University in Linz in 1981. After his studies, he started his professional career as research assistant and subsequently as assistant professor at the Department of Agricultural Policy at Johannes Kepler University (1979–1981). Between 1981 and 1984, he was engaged as senior economic advisor of the Austrian Farming Union and he then changed to the office of State Councilor Leopold Hofinger in 1985. Afterwards, Wilhelm Molterer became advisor to Minister Josef Riegler and in 1989, he became Head of Franz Fischler's Minister's Office. Then he headed the Austrian Farming Union and he also was Member of Parliament between 1990 and 1994. In the following years, Wilhelm Molterer served as the Austrian Federal Minister of Agriculture and Forestry, Environment and Water Resources Management (1994–2003). In 2003, he was elected Fraction Leader of the Austrian People's Party in Parliament. Since January 2007, Wilhelm Molterer has been the Vice Chancellor and Federal Minister of Finance of the Republic of Austria.

Lucas D. Papademos

Lucas D. Papademos has been the Vice President of the European Central Bank since June 2002. He is also a Member of the Executive Board and of the Governing Council of the ECB. Previously, he was Governor of the Bank of Greece from 1994 to 2002, Deputy Governor from 1993 to 1994 and Economic Counselor (Chief Economist) from 1985 to 1993. From 1975 to 1984, he was a professor of economics at Columbia University in New York. In 1980, he also held the position of a Senior Economist at the

Federal Reserve Bank of Boston. He was elected professor of economics at the University of Athens in 1988 (currently on leave) and a member of the Academy of Athens in 2006. Lucas D. Papademos was born in Athens in 1947. He received a BS in physics (1970), an MS in electrical engineering (1972) and a Ph.D. in economics (1977), all from the Massachusetts Institute of Technology. He has published numerous articles and essays in the fields of macroeconomic theory, the structure and functioning of financial markets, monetary analysis and policy as well as on subjects concerning the economy, financial stability and the conduct of economic policy in the European Union. His most recent articles include: *The Contribution of Monetary*

Policy to Economic Growth. In: Bank-Archiv Journal of Banking and Financial Research. 2004. *Economic Cycles and Monetary Policy*. In: Monetary Policy, Economic Cycle and Financial Dynamics. Paris: Banque de France. 2004. *Economic Heterogeneity, Convergence and Monetary Policy in an Enlarged Euro Area*. In: Journal of Economic Asymmetries. 2004. *Policy-making in EMU: Strategies, Rules and Discretion*. In: Economic Theory. 2006. *Monitoring Hedge Funds: a Financial Stability Perspective*. In: Financial Stability Review No. 10 – Special Issue on Hedge

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Claudia Schmied

Claudia Schmied was born on May 10, 1959 in Vienna. She obtained her Ph.D. at the Vienna University of Economics and Business Administration in 1983. She started her professional career as a corporate account manager in the Innovative Finance Department of Investkredit in 1983. Subsequently, she became Head of the Corporate Finance Department in 1995. In 1997, she took the position of economic-policy advisor in the Office of the Federal Minister and the State Secretary of Finance, before she returned to the Investkredit in 2000. Since July 2004, she has been a Member of the Executive Board of Kommunalkredit Austria and of Dexia Kommunalkredit Bank since 2005; she also served on the supervisory boards of several companies. Moreover, Claudia Schmied was a lecturer at the Vienna University of Economics and Business Administration, her research priority was *The Role of the Economy in Literature*. Experience and acknowledgment she got also in cultural institutions as member of the Kuratorium of the Salzburg Festival, member of the supervisory board of the ART for ART Theaterservice and member of the executive board of the Association Wiener Symphoniker. Claudia Schmied is chairman of the Association for Society and Economic Science (VGW) and member of the executive board of the BSA (Federation of Social-Democratic University graduates) of which she was Vice President from 2002 to 2004. Since January 11, 2007, Claudia Schmied has been Federal Minister for Education, Arts and Culture.

Veit Sorger

Veit Sorger was born in Graz in 1942. He studied law and economics (Ph. D.) in Vienna and started his professional career as assistant of the President of the insurance company Interunfall AG. In 1970, he joined the Salzer Group which is a leading

producer of paper. He managed the development of the plastics production and afterwards he was responsible for sales. In 1982, he became General Manager of the Salzer Papier and Plastics Group and five years later he was appointed General Manager of the Europapapier AG. From 1988 to 1993, Veit Sorger worked for Frantschach AG in the positions of Member of the Board of Management, Deputy CEO and CEO. In 2000, he became Vice President of the Federation of Austrian Industry to become President in 2004. Besides this obligation, Veit Sorger is the Chairman of the Supervisory Board of Mondi Packaging AG (formerly Frantschach AG) and Mondi Business Paper Holding AG (formerly Neusiedler AG).

Herbert Tumpel

Herbert Tumpel, born in 1948, studied economics at the University of Vienna and obtained his master's degree in 1973. Afterwards, he started his professional career at the Department of Economics of the Austrian Trade Union Federation (ÖGB). In 1983, he became head of the Department of Economics of the ÖGB. From 1987 to 1997, he served as executive secretary for economic and social policy and social affairs of the ÖGB. Since 1997, Herbert Tumpel has been in the position of President of the Austrian Federal Chamber of Labour.

Rick van der Ploeg

Rick van der Ploeg is professor of economics at the European University Institute, Florence, Italy and professor of political economy at the University of Amsterdam. In 1981, he obtained his Ph.D. at King's College, Cambridge, U.K. After working for eleven years at Cambridge (UK) and the London School of Economics, he moved in 1988 to be a research professor at CentER, Tilburg University and later Director of the Tinbergen Institute, University of Amsterdam. Before that he was a Founding Director of the Dutch National Network of Ph.D. Education. From 1994 to 1998, he was Chief Financial Spokesman in the Dutch Parliament and from 1998 to 2002 he was State Secretary for Culture, Heritage and Media in the Dutch cabinet under Prime Minister Wim Kok. He has presented a 13-part television series on international economics, has written numerous newspaper columns and books on economic policy for the general public in Dutch, and has published many academic papers and books. He has been a visiting professor in Princeton, Athens, Catania, Siena, Paris, Prague, Vienna, Munich, London and Berlin. His research interests are in public finance, macroeconomics, international economics, natural resources and in the economics of higher education. He is currently an elected member of the UNESCO World Heritage Committee.

Georg Winckler

Georg Winckler has been the Rector of the University of Vienna since 1999 (re-elected in 2003 and 2007). In 2005, he was elected President of the European University Association (EUA). Previously, he was President of the Austrian Rectors Conference (2000–2005) and Vice President of the European University Association (2001–2005). Georg Winckler studied economics at the University of

Princeton and the University of Vienna. Since 1978, Georg Winckler has been a full professor at the University of Vienna, specializing in monetary and applied economics. He has also served as visiting professor (e. g. Georgetown University, Université Fribourg, Comenius University of Bratislava) and he worked as a visiting scholar at the International Monetary Fund. In addition, Georg Winckler has been a member of the European Union Research Advisory Board (EURAB) since 2004.

Die Volkswirtschaftliche Tagung der OeNB stellt eine Plattform für den internationalen Meinungs- und Informationsaustausch zu währungs-, wirtschafts- und finanzmarktpolitischen Fragen zwischen Zentralbanken, wirtschaftspolitischen Entscheidungsträgern, Finanzmarktvertretern und der universitären Forschung dar. Der Konferenzband enthält alle Beiträge der Tagung.

The Economics Conference hosted by the OeNB is an international platform for exchanging views on monetary and economic policy as well as financial market issues. It convenes central bank representatives, economic policy decision makers, financial market players, academics and researchers. The conference proceedings comprise all papers.

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