

**WIFO**

1030 WIEN, ARSENAL, OBJEKT 20  
TEL. 798 26 01 • FAX 798 93 86

**ÖSTERREICHISCHES INSTITUT FÜR  
WIRTSCHAFTSFORSCHUNG**



INSTITUT FÜR HÖHERE STUDIEN  
INSTITUTE FOR ADVANCED STUDIES  
Vienna

**Assessing the Lisbon Strategy  
2005-2010 and Estimating  
Expected Effects from Reaching  
the EU 2020 Goals**

**Stefan Ederer, Jürgen Janger, Serguei Kaniovski,  
Daniela Kletzan-Slamanig (WIFO),  
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Iain Paterson, Edith Skriner, Karin Schönpflug,  
Ulrich Schuh, Wolfgang Schwarzbauer (IHS)**

**May 2011**

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Internal review: Michael Peneder (WIFO)

Research assistance: Dagmar Guttmann, Elisabeth Neppl-Oswald (WIFO)

### Abstract

This study assesses the Austrian economic policy during the second half of the Lisbon Strategy period 2005-2010 and the economic effects to be expected from reaching the targets set within the framework for the new European growth strategy Europe 2020. In all of the areas targeted by the National Reform Programmes, the targets could either be reached or positive trends initiated to improve the conditions for growth and employment in Austria. In some areas, Austria is among the top performing countries within the EU, e.g., in the growth of its R&D ratio as well as in the unemployment rate. In other areas, notwithstanding positive trends, there is still some way to go to reach the targets or to improve conditions for growth and employment, such as in climate policy and in human resources for innovation. Reaching the targets of Europe 2020 could boost real GDP growth between 2010 and 2020 by 0.3 percentage point, a considerable effect which amounts to almost a sixth of trend GDP growth.

Please refer to: [Stefan.Ederer@wifo.ac.at](mailto:Stefan.Ederer@wifo.ac.at), [Juergen.Janger@wifo.ac.at](mailto:Juergen.Janger@wifo.ac.at), [Serguei.Kaniovski@wifo.ac.at](mailto:Serguei.Kaniovski@wifo.ac.at), [Daniela.Kletzan-Slamanig@wifo.ac.at](mailto:Daniela.Kletzan-Slamanig@wifo.ac.at)

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Medieninhaber (Verleger), Herausgeber und Hersteller: Österreichisches Institut für Wirtschaftsforschung, 1030 Wien, Arsenal, Objekt 20 • Tel. (+43 1) 798 26 01-0 • Fax (+43 1) 798 93 86 • <http://www.wifo.ac.at/> • Verlags- und Herstellungsort: Wien

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## Deutsche Kurzfassung

Im März 2000 setzte sich die Europäische Union das strategische Ziel, bis 2010 der wettbewerbsfähigste und dynamischste wissensbasierte Wirtschaftsraum der Welt zu werden, fähig, ein dauerhaftes Wirtschaftswachstum mit mehr und besseren Arbeitsplätzen und einen größeren sozialen Zusammenhalt zu erzielen. Auf Basis einer eher enttäuschenden Zwischenbilanz wurde die Lissabon-Strategie 2005 vereinfacht und neu ausgerichtet, ein wesentliches Element stellten in diesem Zusammenhang die Nationalen Reformprogramme dar. Diese basierten dabei auf 24 integrierten Richtlinien, die auf spezifische nationale Reformbedürfnisse abgestimmt wurden. In Übereinstimmung mit den EU-Zielen bestand das österreichische Programm aus drei wesentlichen Bereichen: makroökonomische Politik, mikroökonomische und Strukturpolitik sowie Beschäftigungspolitik für mehr und bessere Arbeitsplätze. Da die Lissabon-Strategie Ende 2010 endet, wurde im Juni 2010 eine Nachfolgestrategie beschlossen: *Europa 2020 - Eine Strategie für intelligentes, nachhaltiges und integratives Wachstum*. Im Wesentlichen betont die Strategie die drei Prioritäten eines intelligenten, nachhaltigen und integrativen Wachstums. Die österreichische Bundesregierung beschloss die nationalen EU 2020 Ziele im Ministerrat vom 5. Oktober 2010. Diese sehen eine Erhöhung der F&E-Quote, Bildungsziele in den Bereichen der Tertiären Bildung und der Schulabbrecher, eine Erhöhung der Beschäftigungsquoten mit spezieller Berücksichtigung älterer und weiblicher Beschäftigter und Beschäftigter mit Migrationshintergrund, Umwelt- und Klimaziele sowie Ziele zur Bekämpfung der Armutgefährdung vor.

Die vorliegende Studie hat zwei Ziele: Erstens sollen die österreichischen Reforminitiativen im Rahmen der Lissabon-Strategie zwischen 2005 und 2010 in Hinblick auf Wachstums- und Beschäftigungseffekte beurteilt werden. Zweitens wird die Zielerreichung der EU-2020-Ziele in Hinblick auf Wachstums- und Beschäftigungseffekte bewertet.

### **Bewertung der Lissabon-Strategie: 2005 bis 2010**

Während der zweiten Hälfte der Lissabon-Strategie wurde seitens der österreichischen Bundesregierung im Rahmen des Nationalen Reformprogramms eine umfangreiche Reihe von Maßnahmen gesetzt, um die Lissabon-Ziele zu erreichen. Jedoch sollten bei der Bewertung dieser Maßnahmen zwei wesentliche Aspekte berücksichtigt werden: Die außergewöhnlich schlechten makroökonomischen Rahmenbedingungen zwischen 2008 und 2010 erschwerten nicht nur die Erreichung makroökonomischer Politikziele, sondern gefährdeten auch die Umsetzung der gesamten Reformagenda, da Reformen immer von ökonomischen Ressourcen und politischen Anstrengungen getragen sind, die zuletzt aber stark auf die Bekämpfung der Krise und ihrer Effekte fokussiert waren. Zweitens stehen in einigen Bereichen ungenügend Daten zur Verfügung, was speziell hinsichtlich der Beschreibung struktureller Entwicklungen festzustellen ist. Meistens stehen nur Daten bis 2007/2008 zur Verfügung, sodass eine umfassende Gesamtbetrachtung in einigen Bereichen erst in zwei bis drei Jahren möglich sein wird.

Es kann nichtsdestotrotz festgestellt werden, dass die österreichischen Anstrengungen im Rahmen der Lissabon-Strategie entweder im Hinblick auf die Zielerreichung erfolgreich waren oder positive Trends hinsichtlich der Erreichung europäischer und nationaler Ziele bewirkten. Die Ziele wurden entweder erreicht oder beinahe erreicht (F&E Intensität, Beschäftigungsquote), in einigen Bereichen nahm Österreich einen europäischen Spitzenplatz ein (E-government, Wachstum der F&E Intensität, Arbeitslosenquote<sup>1</sup>). In allen Politikbereichen kann entweder ein Trend zur Zielerreichung oder zur Verbesserung der Rahmenbedingungen in Bezug auf Wirtschaftswachstum und Beschäftigung festgestellt werden (z.B. Finanzmarktentwicklung). In manchen Bereichen werden jedoch zusätzliche Anstrengungen nötig sein, um die österreichischen und europäischen Ziele zu erreichen (Humankapital für Innovationen, Klimaziele und Beschäftigung bei Älteren und Niedrigqualifizierten).

Unabhängig von der Zielerreichung kann festgestellt werden, dass die Anstrengungen im Rahmen der Lissabon-Strategie beträchtliche Effekte (sowohl hinsichtlich des BIP als auch der Beschäftigung) auslösten. In den Bereichen Infrastruktur, Informations- und Kommunikationstechnologien (IKT), Umwelttechnologie, aktive Arbeitsmarktpolitik und KMU-Politik wurden beträchtliche Anstrengungen unternommen, um Bedingungen für Wachstum und Beschäftigung zu verbessern und das Wirtschaftswachstum zu steigern. Im Folgenden werden kurz die Hauptbereiche des österreichischen Nationalen Reformprogramms einzeln dargestellt und bewertet.

### **Makroökonomische Politik**

Das wichtigste Ziel der österreichischen makroökonomischen Politik stellt die Nachhaltigkeit der öffentlichen Finanzen dar. Trotz Fortschritten in den vergangenen Jahren wurde dieses Ziel nicht erreicht, was auf die Auswirkungen der Finanzkrise sowie auf den globalen ökonomischen Abschwung zurückzuführen ist. In Übereinstimmung mit dem *European Recovery Plan* wurden zwei große Konjunkturpakete sowie das Vorziehen der Einkommensteuerreform beschlossen, was zu einem starken Anstieg des gesamtstaatlichen Defizits sowie des Schuldenstandes des Gesamtstaates führte. Simulationen von WIFO und IHS ergaben, dass diese Stabilisierungsmaßnahmen Effekte im Ausmaß von 1,2% bis 1,4% des BIP bewirkten. Als eine kleine offene Volkswirtschaft profitierte Österreich auch von den Konjunkturmaßnahmen seiner Handelspartner. Das WIFO beziffert die Effekte auf zusätzlich 0,8 Prozent der österreichischen Wirtschaftsleistung. In Hinblick auf die langfristigen Effekte sowie Verteilungseffekte der Steuerreform und einkommensstärkender Maßnahmen im Rahmen der Konjunkturpakete ergaben IHS Berechnungen, dass sich der Anstieg des Einkommens infolge dieser Maßnahmen relativ gleichmäßig auf alle Einkommensgruppen verteilte und dass der private Konsum langfristig um 2.5 Prozent ansteigt. Von den familienbezogenen Maßnahmen

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<sup>1</sup> Die positive Entwicklung des österreichischen Arbeitsmarktes während der Krise im europäischen Vergleich ist dabei besonders beachtenswert. Die saisonbereinigte Arbeitslosenquote betrug 4.4 Prozent im August 2010 und war somit die niedrigste in der Europäischen Union.

sowie der Steuerreform profitieren vor allem Haushalte mit einem Jahreseinkommen von bis zu 30.000 Euro.

Das jüngste Stabilitätsprogramm der österreichischen Bundesregierung sieht vor, das Budgetdefizit bis 2013 unter drei Prozent zu senken. Der Schuldenstand dürfte über diesen Horizont noch ansteigen, jedoch dürfte sich der Anstieg verlangsamen. Aufgrund der beschlossenen Konsolidierungsmaßnahmen dürfte sich der Schuldenstand des Gesamtstaates bis 2013 auf 74,3 in Relation zum Bruttoinlandsprodukt erhöhen.

## **Strukturpolitik**

### **F&E- und Innovationspolitik**

Das Hauptziel in der Forschungs- und Innovationspolitik war die Erhöhung der F&E-Intensität auf 3%. Schätzungen zufolge beläuft sich die österreichische F&E-Quote 2010 auf 2,76%. In keinem anderen EU-Mitglied entwickelte sich die F&E-Quote so dynamisch wie in Österreich. Es ist davon auszugehen, dass die Erhöhung des österreichischen F&E-Kapitalstocks zu einem beachtlichen Anstieg der totalen Faktorproduktivität (TFP) im Ausmaß von 25% bis 30% geführt hat, was wiederum die Wirtschaftswachstumsraten erhöhen sollte. Zusätzlich erhöht eine höhere F&E-Intensität das Potentialwachstum der österreichischen Volkswirtschaft.

Dieser sehr positiven Entwicklung stehen jedoch auch Problembereiche gegenüber, die die Wachstumseffekte der erhöhten F&E-Intensität beeinträchtigen könnten. So ist die F&E-Quote des privaten Sektors hoch konzentriert, da ca. 50% der Forschungs- und Entwicklungsausgaben auf lediglich 33 Unternehmen entfallen. Zusätzlich erreichte der staatliche Anteil an den F&E-Ausgaben im Laufe der Krise zuletzt 41%, was das ursprünglich angepeilte Ziel von 33% deutlich übersteigt. Darüber hinaus war die Forschungs- und Innovationspolitik vor allem auf die finanzielle Forschungsförderung konzentriert, während andere wichtige Bestandteile im Innovationsprozess weniger Unterstützung erhielten. Rahmenbedingungen für den Innovationsprozess wie beispielsweise die Verfügbarkeit von gut ausgebildeten Wissenschaftlern, die Bereitstellung von Risikokapital sowie Wettbewerbsbedingungen sind jedoch für die Entfaltung der Wachstumseffekte einer höheren F&E-Intensität von entscheidender Bedeutung.

Bei der Umsetzung der österreichischen Lissabon-Strategie wurden neben der Erhöhung der F&E-Quote noch weitere Ziele verfolgt, so wurde die Förderung der Spitzenwissenschaft verstärkt und das Institute of Science and Technology Austria (IST-A) gegründet. Es ist davon auszugehen, dass in Zukunft von diesem Institut entscheidende Impulse für die wissenschaftliche Forschung in Österreich ausgehen werden. Es kam ebenfalls zu einer Reihe von Finanzierungsmaßnahmen, die darauf abzielten, die Innovationskraft österreichischer Unternehmen durch Kooperationen zu stärken, um Defizite, die in den 1990er Jahren festgestellt worden waren, zu beseitigen. Verfügbare Indikatoren deuten auf einen Erfolg der gesetzten Maßnahmen in diesem Bereich hin. Ähnliches kann bei der nicht F&E-getriebenen Innovationstätigkeit im Bereich von Klein- und Mittelunternehmen festgestellt werden, wo sich Österreich im europäischen Vergleich bereits auf einem hohen und nach wie vor steigenden

Niveau befindet. Auch werden Fortschritte bei der Humankapitalausstattung im Innovationsbereich geortet, jedoch stellen existierende Defizite im Bereich von Frauen in Technik&Naturwissenschaften und allgemein im Bereich von Humanressourcen für Innovation Herausforderungen für die Innovations- und Bildungspolitik der kommenden Jahre dar.

### **Infrastrukturpolitik**

Im Rahmen der endogenen Wachstumstheorie wird der Infrastruktur eine wichtige Rolle als Wachstumstreiber zugeordnet. Die Verbesserung der Verkehrsinfrastruktur einer Ökonomie zählt zu jenen Bereichen, in denen Wirtschaftspolitik dazu beitragen kann, eine höhere Wirtschaftsleistung und Produktivität für die Gesamtwirtschaft zu erzielen. Verbesserte Verkehrsinfrastruktur trägt zur Verringerung der Transportkosten bei und kann somit zu einer optimaleren Verteilung knapper ökonomischer Ressourcen führen, die produktiveren Bereichen zugeführt werden können, was die gesamtwirtschaftliche Produktivität steigert.

Die im Rahmen der Lissabon-Strategie realisierten Verkehrsinfrastrukturprojekte waren darauf ausgerichtet, die Verbindungen zu den östlichen und nördlichen Nachbarländern zu verbessern sowie die Verkehrsbelastung des Großraums Wien zu reduzieren. Dies stellt somit wesentliche Qualitätsverbesserungen der österreichischen Verkehrsinfrastruktur dar. Eine vorsichtige Abschätzung der Effekte dieser Verkehrsinfrastrukturverbesserungen (2005 bis 2010) ergibt, dass die Verkehrsinfrastrukturmaßnahmen das österreichische Bruttoinlandsprodukt langfristig um 2,2% erhöhen.

Hohe IKT-Investitionen haben zum starken Anstieg der Produktivität der US-Wirtschaft in den 1990er Jahren entscheidend beigetragen. IKT-Investitionen sowie die effektive Nutzung der IKT-Infrastruktur stellen einen integralen Bestandteil der Lissabon-Strategie dar. Informations- und Kommunikationstechnologie beeinflussen die ökonomische Entwicklung über drei Kanäle: Erhöhung des IKT-Kapitalstocks (Capital Deepening), Erhöhung der totalen Faktorproduktivität über das Wachstum in Hi-Tech-IKT-Industrien und Ausstrahlungseffekte in andere Wirtschaftssektoren. Die Maßnahmen, die in der österreichischen Lissabon-Strategie vorgesehen sind, scheinen adäquat, um die positiven Effekte von IKT realisieren zu können. Jedoch sind die Effekte in Hinblick auf Wachstums- und Beschäftigungswirkungen schwer abzuschätzen, da die ökonomische Literatur darauf verweist, dass es zu einer Interaktion mit vielen anderen Einflussgrößen kommt. Zusätzlich wurde gezeigt, dass der direkte Effekt von IKT auf Produktivität beschränkt ist, da auf IKT-Kapital nur ein kleiner Anteil der gesamten Wertschöpfung entfällt. Insgesamt ist aber davon auszugehen, dass die Breitbandinitiative in Kombination mit der erfolgreichen E-Government-Initiative langfristig die totale Faktorproduktivität der österreichischen Wirtschaft erhöht, vor allem auch deshalb, weil in Österreich dank des Erfolgs der E-Government-Initiative Abläufe bei der öffentlichen Verwaltung im Kontakt mit Bürgern und Unternehmen effizienter und schneller geworden sind. Davon profitiert letztendlich Österreich als Wirtschaftsstandort, da administrative Kosten für Individuen und Unternehmen sinken. Daraus kann abgeleitet werden, dass positive Wachstumseffekte und somit auch Beschäftigungseffekte entstehen, wobei letzterer Effekt



unklar ist, zumal Produktivitätssteigerungen nicht zwingend mit einer Erhöhung der Beschäftigungsnachfrage einhergehen müssen.

### **Klima- und Umweltpolitik**

Im Bereich der Klima- und Umweltpolitik strebte die österreichische Wirtschaftspolitik zwei wesentliche Ziele an, die Bekämpfung des Klimawandels und die Weiterentwicklung des Umwelttechnologiesektors, wobei anzumerken ist, dass diese beiden Ziele in enger Verbindung zueinander stehen.

In Hinblick auf die Bewältigung der Folgen des Klimawandels ist seit 2005 (bis 2008) eine Trendumkehr in Bezug auf die Entwicklung der Emission von Treibhausgasen festzustellen. Dieser Trend dürfte sich auch 2009, nicht zuletzt aufgrund der Wirtschaftskrise, fortgesetzt haben. Österreich hat jedoch das ehrgeizige Ziel einer Reduktion von Treibhausgasen um 13% zwischen 2008 und 2012 in Bezug auf 1990 noch nicht erreicht. Die ökonomischen Effekte, die sich aus den Anstrengungen zur Eindämmung des Klimawandels ergeben, sind beachtlich: eine Million Euro Investitionen führt zur Entstehung von 14 bis 17 Jobs. Eine doppelte, wenn nicht auch dreifache Dividende kann deshalb bei der Bekämpfung des Klimawandels entstehen: Investitionen tragen zur Steigerung des Wirtschaftswachstums bei, reduzieren Treibhausgasemissionen und verbessern entscheidend die langfristigen Betriebskosten von Anlagen (Gebäude, Industrieanlagen).

In Bezug auf die Weiterentwicklung des Umwelttechnologiesektors kann für Österreich ein Erfolg festgestellt werden, der sich anhand schnell und stark steigender Umsatzerlöse (+12%), Exporte (+12%) und Beschäftigung (+6%) beziffern lässt, wobei die Dynamik des Sektors jene des gesamten Industrie übertraf. Zusätzlich weisen Umwelttechnologieunternehmen ein überdurchschnittliches Ausmaß an F&E-Intensität aus, obwohl diese in geringerem Maße von öffentlichen F&E-Förderungen profitierten.

Insgesamt kann festgestellt werden, dass trotz der Vielzahl an gesetzten Maßnahmen verstärkt Anstrengungen nötig sind, um die österreichischen EU-2020-Ziele in den Bereichen Energieeffizienz, erneuerbare Energien und Treibhausgasemissionen zu erreichen.

### **Wettbewerbspolitik und KMU-Initiative**

Im Rahmen der Lissabon-Strategie wurde eine Reihe von Maßnahmen ergriffen, um die Wiener Börse zu attraktiveren. Das Privatisierungsprogramm etwa trug dazu bei, die Anzahl der an der Börse gelisteten Unternehmen zu erhöhen und die Marktkapitalisierung zu steigern. Die Aktienmarktkapitalisierung Österreichs in Relation zum Bruttoinlandsprodukt ist im EU-15-Vergleich trotz der gesetzten Maßnahmen weiterhin jedoch unterdurchschnittlich, was auf einen wenig entwickelten Finanzsektor hinweist. Es ist jedoch, nicht zuletzt auch vor dem Hintergrund der aktuellen Wirtschafts- und Finanzkrise, zu hinterfragen, ob dies ein Nachteil ist, zumal unklar ist, ob finanzmarktbasiertere Ökonomien eine durchschnittlich höhere Wachstumsdynamik aufweisen als bankenbasierte Ökonomien. Betrachtet man beispielsweise den Indikator der heimischen Kredite an den privaten Sektor in Relation zum

Bruttoinlandsprodukt, so ergibt sich, dass die Entwicklung des österreichischen Finanzsektors im EU-Vergleich als fortgeschritten einzustufen ist.

Alle FSAP- und POST-FSAP-Richtlinien, deren Umsetzung bis September 2010 geplant war, wurden bereits in nationales Recht umgesetzt. Vor dem Hintergrund eines Zusammenhangs von Finanzsektorentwicklung und Wirtschaftswachstum dürfte dies das Potentialwachstum der österreichischen Volkswirtschaft daher positiv beeinflussen.

Ein wesentliches Charakteristikum der österreichischen Ökonomie ist deren Offenheitsgrad. Im Außenhandelssektor spielt der Warenexport im Gegensatz zum Export von Dienstleistungen nach wie vor eine zentrale Rolle. Es ist auch festzustellen, dass das Wachstumspotential im internationalen Vergleich, das sich in den Bereichen Tourismus und Unternehmensdienstleistungen ergibt, noch nicht vollständig ausgeschöpft ist. Es kam im Zuge der Finanz und Wirtschaftskrise zu einem starken Einbruch bei den Exporten, der bei Maschinen und Fahrzeugen sowie Zwischenprodukten im Allgemeinen besonders stark ausgeprägt war. Für das aktuelle und das kommende Jahr ist davon auszugehen, dass sich die österreichische Exportwirtschaft wieder erholen wird. Dabei wird die von der Regierung im Rahmen der Lissabon-Strategie initiierte Internationalisierungsoffensive entscheidend beitragen, da diese die Wettbewerbsfähigkeit des österreichischen Außenhandelssektors im Allgemeinen und jene der Klein- und Mittelunternehmen sowie wissensbasierte Dienstleistungen im Speziellen stärken wird.

Aufgrund der bestehenden Struktur der österreichischen wie auch europäischen Wirtschaften stellten KMU fördernde Maßnahmen auch ein wesentliches Element der Lissabon-Strategie dar. Wesentliche Maßnahmen in dieser Hinsicht betrafen die Verbesserung der Finanzierungsbedingungen und der Besteuerung von KMUs sowie die Reduktion von administrativen Kosten für Unternehmen. In den vergangenen Jahren kann ein überdurchschnittliches Wachstum an KMUs in Österreich festgestellt werden, obwohl das Beschäftigungswachstum bei KMUs unter dem EU-Durchschnitt lag. Dies ist im Hinblick auf die höhere Beschäftigungsquote in Österreich aber nicht zufriedenstellend.

### **Arbeitsmarktpolitik**

Im internationalen Vergleich ist der österreichische Arbeitsmarkt in einem sehr guten Zustand. Dies konnte sowohl bereits vor der Krise als auch während der Krise festgestellt werden, da sich die Auswirkungen der Krise am Arbeitsmarkt weniger stark als in vielen anderen europäischen Ökonomien niederschlugen. Die österreichische Arbeitslosenquote war 2009 mit 4,8% die zweitniedrigste in der Europäischen Union. Obwohl die Krise zu einem Anstieg der Arbeitslosenquote führte, war der Wert nicht viel höher als zuletzt 2005. Die Arbeitslosenquote bei Männern war 2009 etwas höher als jene bei Frauen, was darauf zurückzuführen war, dass durch die Krise jene Branchen stärker getroffen wurden, in denen der Beschäftigungsanteil von Männern höher ist. Den jüngsten Eurostat-Daten zufolge, sank die saisonbereinigte Arbeitslosenquote auf 4,3% im August 2010 und war somit die Niedrigste in der gesamten EU.

Im Europäischen Vergleich ist die Langzeitarbeitslosenquote relativ niedrig, jedoch kann nicht ausgeschlossen werden, dass diese in Folge der Krise steigt. Zusätzlich stellt die Jugendarbeitslosigkeit ein Problem dar. Diese betrug 2009 10%. Obwohl die Höhe dieser Quote im EU-Vergleich relativ niedrig ist, hat sie sich seit 2000 nahezu verdoppelt, was nur zu einem geringeren Teil auf die Auswirkungen der Krise zurückgeführt werden kann.

Die Beschäftigungsquoten sind im Allgemeinen und in den meisten Altersgruppen hoch. Die Gesamtbeschäftigungsquote betrug 2009 71,6% und lag sechs Prozentpunkte über dem EU-15-Durchschnitt, drei Prozentpunkte über dem Niveau von 2005. Auch liegen die Beschäftigungs- und Erwerbsbeteiligungsquoten von Frauen in Österreich über dem EU-Durchschnitt. Bei älteren Arbeitnehmern hingegen werden in Österreich hohe Aktivierungspotentiale geortet, zumal sowohl die Erwerbsbeteiligungsquote als auch die Beschäftigungsquote bei dieser Altersgruppe im EU-Vergleich sehr niedrig ist. Eine Vielzahl an Reformen, die darauf abzielten, das effektive Pensionsantrittsalter zu erhöhen, zeigten nur bedingt Erfolge. So stieg die Beschäftigungsquote der 55- bis 64-jährigen zwischen 2005 und 2009 zwar von 28,5% auf 41%, diese liegt jedoch nach wie vor unter dem EU-Durchschnitt. Daraus kann abgeleitet werden, dass zusätzliche Anstrengungen unternommen werden müssen, um die Partizipationsquote älterer Arbeitnehmer zu erhöhen und somit die Nachhaltigkeit des Sozialsystems sicherzustellen zu können.

Ein weiterer zukünftiger Reformschwerpunkt ergibt sich bei niedrig qualifizierten Arbeitnehmern. So betrug die Arbeitslosenquote bei niedrigqualifizierten Arbeitnehmern 2009 10,1% und war damit doppelt so hoch wie die generelle Arbeitslosenquote. Die Beschäftigungsquote bei Niedrigqualifizierten zwischen 25 und 64 Jahren betrug lediglich 55,6% (im Vergleich zu 53,3% im Jahr 2005), was angesichts der hohen generellen Beschäftigungsquote niedrig und nicht zufriedenstellend ist.

Gemäß der vorliegenden Analyse trug die aktive Arbeitsmarktpolitik signifikant zu den positiven Ergebnissen am Arbeitsmarkt bei. Simulationen zeigen, dass die berücksichtigten Maßnahmen der österreichischen Arbeitsmarktpolitik die Arbeitslosenquote um 0,3 Prozentpunkte senkten, bei den Niedrigqualifizierten ist der Effekt mit -0,7 Prozentpunkten sogar noch stärker. Die Beschäftigung insgesamt stieg um 0,3% (13.000 Beschäftigte), was einer Erhöhung des BIP um 0,25% entspricht. Ergebnisse der Studie von *Felderer et al.* (2010) zeigen, dass eine Reduktion der Sozialbeiträge von älteren Arbeitnehmern zu einem Anstieg ihrer Erwerbsbeteiligung im Ausmaß von 0,6 Prozentpunkten führten und die Beschäftigung somit um 10.000 Personen erhöhten. Ein weiteres Kapitel widmete sich den Effekten der Kurzarbeit in Österreich. Gemäß OECD-Schätzungen (2010A) dürfte die in Österreich in Folge der Krise eingeführte Kurzarbeit die Beschäftigung um 4.000 Personen erhöht haben.

Im internationalen Vergleich in den Bereichen Aus- und Weiterbildung belegt Österreich einen relativ guten Platz. Bei beinahe allen Indikatoren ergibt sich für Österreich ein im Vergleich zur EU überdurchschnittliches Ergebnis. Ein Problem in diesem Bereich ist jedoch die im internationalen Vergleich niedrige Akademikerquote. Zusätzlich dazu ergeben sich Defizite

in den Bereichen des lebenslangen Lernens sowie bei der höchsten erworbenen Ausbildung von Beschäftigten.

### **Erwartete Effekte der Erreichung der EU-2020-Ziele**

Die Erreichung der österreichischen Ziele der EU-2020-Strategie hinsichtlich der F&E-Intensität, des Akademikeranteils und der Beschäftigungsquote würde das österreichische BIP-Wachstum um 0,3 Prozentpunkte zwischen 2010 und 2020 erhöhen, was angesichts des Niveaus der langfristigen BIP-Wachstumsrate von 2% beachtlich ist. Da die Effekte, die sich aus der Zielerreichung ergeben, über 2020 hinaus wirken, würde das österreichische BIP 2050 um 5% höher sein als im Alternativszenario ohne Erreichung der EU-2020-Ziele.

Die ökonomischen Effekte der Erreichung der Klima- und Umweltziele können nur kurz skizziert werden, zumal zu wenig Informationen über die genauen Maßnahmen in diesem Bereich zur Verfügung stehen, die die Modellierung der Effekte ermöglichen würden. Induzierte Investitionseffekte und langfristige Energiekosteneinsparungen dürften jedoch beträchtliche ökonomische Effekte bewirken, da eine Million Euro an Investitionen in "grüne Maßnahmen" die Entstehung von 11 bis 16 neuen Jobs bewirkt.

Das Erreichen der Beschäftigungsziele dürfte nach vorsichtigen Schätzungen das Armutsrisiko von ca. 20.000 Personen reduzieren. Dies würde 10 Prozentpunkte zur Erreichung des österreichischen Ziels der Armutsbekämpfung beitragen, was die Bedeutung von zielgerichteten Maßnahmen zur Erreichung der ehrgeizigen österreichischen Ziele im Bereich der Armutsbekämpfung unterstreicht.

Die vorliegende Studie versucht ebenso, Wachstumshemmnisse in Österreich zu identifizieren. Die Beseitigung dieser Engpässe ist besonders wichtig, um die gesteckten EU 2020 Ziele zu erreichen.

### **Identifikation von Wachstumshemmnissen**

Die Analyse der Wachstumshemmnisse ergab folgendes Ergebnis:

- F&E-Intensität
  - Hohe Konzentration der F&E-Ausgaben im Unternehmenssektor
  - Wachstumsdynamik junger und innovativer Unternehmen
  - Universitäre Forschung
- Beschäftigungsquote
  - Beschäftigungsquote von Frauen, älteren Personen und Migranten
  - Niedriger Qualifizierungsgrad von Migranten
  - Schwache Inlandsnachfrage
- Klimaziele
  - Gebäude
  - Transportsektor
  - Ausgewählte Industriebranchen
  - Energiegewinnung

- Öffentliche F&E-Ausgaben im Bereich sauberer Umwelttechnologien
- Tertiäre Ausbildung
  - Anteil von Schülern in der Sekundärbildung mit Zugang zu Höherer Bildung
  - Drop-Out-Quoten in Höheren Bildungsinstitutionen
- Armutsbekämpfung
  - Armutsvermeidung
  - Armutsbekämpfung

### **Makroökonomische Effekte der Erreichung der Forschungs-, Tertiärbildungs- und Beschäftigungsziele**

Der kumulative makroökonomische Effekt, der sich aus der Erreichung der Bildungsziele, der F&E-Intensität sowie der Beschäftigungsziele ergibt, wurde mittels des Langfristmodells von WIFO und IHS simuliert. Falls die gesetzten Ziele tatsächlich erreicht werden sollten, dürfte das reale BIP-Wachstum zwischen 2010 und 2020 um 0,3 Prozentpunkte höher sein als im Basisszenario (ohne Erreichung der EU-2020-Ziele), wobei anzumerken ist, dass sich auch für die Zeit nach 2020 ein positives längerfristiges Wachstumsdifferential von 0,1 Prozentpunkten ergibt. Deshalb ist das BIP-Niveau 2020 um 2,92% höher und 2050 um 5,23% höher als im Basisszenario. Das höhere Wachstum ergibt sich aus einer höheren Arbeitsproduktivität aufgrund einer höheren F&E-Intensität sowie einer besseren Ausbildungsstruktur der österreichischen Bevölkerung und verbesserten Arbeitsmarktbedingungen. Im Vergleich zum Basisszenario ist die Beschäftigungsquote 2020 um 2 Prozentpunkte höher, die strukturelle Arbeitslosenquote ist langfristig um 0,6 Prozentpunkte niedriger. Der Anstieg der Beschäftigungsquote und das Sinken der strukturellen Arbeitslosenquote weisen dabei kurz- bis mittelfristig die höchsten Wachstumseffekte auf. Eine günstige Arbeitsangebotsentwicklung einhergehend mit moderatem Lohnwachstum bewirkt einen Anstieg der Arbeitsnachfrage. Der Anstieg der Beschäftigungsquote um 2,6 Prozentpunkte ergibt sich aus einer moderateren Reallohndynamik.

Die Simulationsergebnisse zeigen, dass die Erreichung der F&E-Ziele, der Bildungsziele sowie der Beschäftigungsziele langfristig beträchtlich positive ökonomische Effekte auslösen können. Das Wachstum des realen BIP bleibt über dem des Basisszenarios und resultiert 2050 in einem kumulativen BIP-Effekt von 5,23%. Auch die Erwerbsbeteiligung und Beschäftigung sind langfristig höher als im Basisszenario. Nach einem anfänglichen Rückgang bei der Lohndynamik ist der Reallohn pro Beschäftigtem 2050 um 1,1% höher als im Basisszenario.

### **Erwartete Effekte der Erreichung der Klimaziele**

Die Bewertung der Erreichung der Klimaziele der österreichischen EU-2020-Strategie ist aus mehreren Gründen nur beschränkt möglich. Obwohl die allgemeinen Rahmenbedingungen festgelegt und bereits Maßnahmenvorschläge entwickelt wurden, ist derzeit die genaue Maßnahmenkombination, die für die Abschätzung der Kosten entscheidend ist, noch nicht festgelegt. Andere wichtige Rahmenbedingungen zur Wachstumseffektabschätzung sind das

zukünftige Wirtschaftswachstum, die Entwicklung der Energiepreise und die Vorgaben eines eventuellen neuen weltweiten klimapolitischen Abkommens. Anhand von Ergebnissen zahlreicher Studien, die die ökonomischen Effekte bestimmter Instrumente der Umweltpolitik untersuchten, können Beschäftigungseffekte von umweltpolitischen Maßnahmen kurz dargestellt werden. Die Maßnahmenkategorien sind thermische Sanierung von Gebäuden, Maßnahmen zur Steigerung der Energieeffizienz im Bereich der Unternehmen sowie Energiegewinnung durch erneuerbare Ressourcen. Eine Million Euro an Investitionen in thermische Sanierung generiert Beschäftigungseffekte in der Höhe von 11 bis 14 Personen, während der Investitionsphase. Der Beschäftigungseffekt von Energieeffizienz steigernden Maßnahmen im Unternehmenssektor beläuft sich auf 14 bis 16 Personen pro investierte Million Euro, im Bereich der Energiegewinnung beläuft sich der Beschäftigungseffekt auf 13 bis 14 Personen pro investierter Million Euro. All diese Effekte sind jedoch nicht permanent und beziehen sich auf einen einmaligen Nachfrageimpuls in einem gewissen Bereich. Jedoch sollten neben den Investitionseffekten die Effekte, die sich in der Betriebsphase ergeben, beurteilt werden. Speziell im Bereich der Energiegewinnung mittels Biomasse können die Betriebsphaseneffekte über den Lebenszyklus jene der Investitionsphase beträchtlich übersteigen.

### **Erwartete Effekte der Erreichung der EU-2020-Ziele zur Armutsbekämpfung**

Eine bedeutende Innovation der EU-2020-Strategie im Vergleich zur Lissabon-Strategie war es, die Bekämpfung der Armutsgefährdung zu einem expliziten Ziel zu machen. Für die gesamte EU ist das Ziel formuliert worden, die Zahl der Armutsgefährdeten um 20 Millionen zu reduzieren. Trotz einer vergleichsweise guten Ausgangsposition – der Anteil von armutsgefährdeten Personen in Österreich ist sechs Prozentpunkte niedriger als im EU-Durchschnitt – hat sich die österreichische Regierung das ehrgeizige Ziel gesetzt, den Anteil der armutsgefährdeten Personen an der Gesamtbevölkerung bis 2020 um 15% zu reduzieren. Dabei ist zu erkennen, dass die österreichische Strategie einen Ansatz verfolgt, der auf der Komplementarität der einzelnen Maßnahmen bzw. Zielen der EU-2020-Strategie beruht, um das Wachstumspotential mittels zielgerichteter Politikmaßnahmen in Hinblick auf speziell gefährdete Gruppen zu steigern.

Unter Verwendung eines am IHS entwickeltem Analyseansatzes wurde errechnet, dass durch Erreichung der EU-2020-Beschäftigungsziele die Zahl der gefährdeten Personengruppe um etwa 20.000 Personen sinkt, was in etwa 10% des angestrebten Ziels entspricht. Dies unterstreicht die Wichtigkeit zielgerichteter und komplementärer Maßnahmen, um das ehrgeizige EU-2020-Ziel der Reduktion der Armutsgefährdung zu erreichen.

## 1. Executive Summary

In March 2000 the European Union set the strategic goal for the next decade to make the Union the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion. Due to limited success until 2005, the Lisbon strategy was re-launched by introducing *National Reform Programmes*. These reform programmes were based on 24 Integrated Guidelines and were tailored to the specific national needs and the situation of each Member State to promote growth and employment within a three-year planning period. In accordance with EU targets the first Austrian programme comprised three main areas: *macroeconomic policy, microeconomic and structural policy* to foster growth potentials and *employment guidelines* for more and better jobs. As the Lisbon strategy expires at the end of 2010, a follow-up strategy called *Europe 2020 – A European strategy for smart, sustainable and inclusive growth* was agreed upon at the March 2010 session of the European Council. The centrepieces of this strategy are three priorities suggested by the European Commission of a *smart, sustainable and inclusive growth*. The Austrian government decided on the national EU-2020 goals on 5<sup>th</sup> October 2010, these include an *increase in the R&D ratio, education targets* related to tertiary education and early school leavers, *raising employment rates* with special emphasis on elder employees, females and migrants, *environmental targets* and *poverty reduction*.

The aim of this study is twofold. The first part presents an evaluation of the Austrian reform initiatives in the context of the Lisbon agenda between 2005 and 2010 with respect to growth and employment. The second part is an evaluation of the effects of achieving the Austrian goals of the Europe 2020 strategy also with respect to growth and employment.

### **Assessing the Lisbon Strategy: 2005-2010**

During the second half of the Lisbon Agenda the Austrian government implemented within the framework of the National Reform Programme a host of policies and reforms aimed at reaching the Lisbon goals and at boosting growth and employment in general. When assessing these efforts, two aspects need to be borne in mind: first, from 2008 to 2010, exceptionally unfavourable macro-economic circumstances prevailed, not only affecting the macro-economic goals but also the overall reform agenda, as reforms always need economic resources and political energy which were to a considerable extent invested in combating the economic crisis. Second, the assessment of the Lisbon Strategy in Austria suffers from a lack of data in particular as regards structural developments. The most recent data are often only available for the year 2007 or 2008, so that a final and detailed structural assessment will in some areas only be possible in around two or three years.

Nevertheless, it can be argued that the Austrian efforts within the Lisbon Strategy were successful at either reaching the targets or initiating positive trends towards meeting these

European and national targets. In some instances the targets were reached or almost reached (R&D intensity, employment rate), in some areas Austria was the European top performer (e-government, growth in R&D intensity, unemployment rate<sup>2</sup>). In all areas there is a positive trend towards reaching the goals or towards improving the conditions for economic growth and high employment in Austria (e.g. financial market development). In some areas, there is still some way to go to meet these European and Austrian goals or to improve economic performance (e.g. human resources for innovation, climate change goals, employment of the elderly and of the low-skilled).

Independently of meeting the goals, the activities produced considerable economic effects in terms of both GDP growth and employment. In the areas infrastructure, information and communication technologies (ICT), development of the environmental technology sector, active labour market policies and SME policies, substantial measures were taken to improve the conditions for growth and employment and to boost GDP growth. In the following, each main area of the Austrian NRP will be examined in turn.

### *Macroeconomic policies*

Austria's main strategic macroeconomic policy target in the context of the Lisbon agenda was the sustainability of public finances. Despite some progress in recent years, this target could not be achieved due to the effects of the financial crisis and the global economic downturn that hit the Austrian economy severely. In accordance with the European Recovery plan large fiscal stimulus packages were introduced including an income tax reform which led to substantial rises in the general government deficit as well as the general government debt. According to simulations of WIFO and IHS, these stabilisation measures were successful in combating the effects of the crisis, the GDP effects are estimated to range between 1.2 and 1.4 percent. As Austria is a small open economy its economy also benefited from fiscal stimulus packages of its main trading partners. According to WIFO simulations the effects of these increased Austrian GDP by an additional 0.8 percent. With respect to the long term and distributional effects of the Austrian tax reform IHS simulations suggest that the increase in incomes is relatively equal across all income groups and that household consumption will increase by about 2.5 percent in the long run. Family related measures of the stimulus packages as well as the tax reform were beneficial mainly for households with an annual income of up to 30,000 Euros.

In its latest stability programme the Austrian government committed itself to reduce the budget deficit below the 3% threshold by 2013, acknowledging the benefits of sound public finances. General government debt is expected to rise, albeit at a slower pace. Due to the consolidation measures undertaken, the annual increase in the gross debt ratio will fall from

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<sup>2</sup> The good performance of the Austrian labour market during the crisis in European comparison is particularly noteworthy. The seasonally adjusted unemployment rate stood at 4.4 percent in August 2010, which is the lowest value among all countries in the European Union.



6.2 percentage points in 2009 to 0.7 percentage points in 2013. This will result in a gross debt of 74.3 percent of GDP by 2013.

### *Structural policies*

#### **Research and innovation policies**

The main goal of efforts was reaching the European objective of an R&D intensity of 3%. This objective has almost been reached with Austria's R&D ratio standing at an estimated 2.76% in 2010. No other country in the EU has made such dynamic progress towards the Lisbon objective for R&D intensity. The increase of the Austrian R&D capital stock in the second half of the Lisbon Agenda should substantially increase the level of total factor productivity (TFP) by approx. 25 to 30%, which in turn should boost GDP growth rates until the new level has been reached. A higher R&D intensity should also stimulate growth in the long run.

This very positive assessment needs to be somewhat qualified due to a few problem areas which may reduce the expected growth effects from increased R&D intensity. To begin with, R&D expenditure in the business sector is highly concentrated with 33 firms responsible for 50% of total R&D expenditure. Furthermore, the share of government spending on R&D reaches 41% in the wake of crisis, considerably higher than the target of 33%. Last, but not least, the focus of government support was on funding policies, while other important ingredients for the innovation process receive less support. Framework conditions for innovation such as the availability of trained scientists and engineers, private risk financing and competitive market environments matter for rising R&D intensity to be translated into higher economic growth.

The implementation of the Lisbon Strategy in Austria pursued a number of objectives in addition to raising the R&D spending ratio. To foster excellence of basic research, the Institute of Science and Technology Austria (IST-A) was set up. This institute is well designed and it can be expected that once it has reached full capacity it will be a major contributor to Austrian scientific research. Many funding schemes were targeted at fostering cooperation on innovation, where deficits were observed in the 1990ies. The available indicators show that government efforts have been successful and that weak cooperation on innovation has been eliminated. A similar claim can be made for non-R&D innovative activities by SMEs, where Austria can boast high and growing levels in Europe. Last, but not least, efforts at improving human resources for innovation have triggered some positive trends, but overall the observed gaps for female researchers and for the availability of human resources for innovation in general will also challenge Austrian innovation and education policies over the next ten years.

#### **Infrastructure policies**

Infrastructure, in general, is considered to be of great importance as an engine for growth according to endogenous growth theory. Improving the transport infrastructure of an economy is among the areas in which public policy can achieve a higher level of

productivity and output. The reason for this is that an improved transport infrastructure will reduce transport costs and will divert economic resources from transportation to more productive uses. Through reducing costs and strengthening productivity, transport infrastructure will have a positive effect on the whole country as an attractive location for enterprises. These positive effects are well documented in the literature. The recent traffic infrastructure investment projects focused on improving the links to northern and eastern neighbour countries as well as reducing congestion in the greater Vienna region, which appear to be important improvements. We estimate the long run growth effects of the measures undertaken in the period 2005 – 2010 on Austrian real GDP to be around 2.2%.

High investment in ICT has contributed to the surge in productivity growth in the United States since the 1990s. Investment into and effective use of ICT is an integral part of the Lisbon Agenda. The impacts of ICT on productivity are achieved in three ways – by raising capital stock (capital deepening), by raising total-factor productivity through growth in high tech ICT sectors and spill over effects to other sectors. Measures in the Austrian NRP are in line with the Lisbon Agenda and IHS regards them as adequate. It is, however, difficult to quantify the exact magnitude of the initiatives in this field, as a number of studies have shown that ICT interacts with various other economic variables. Further on it was shown that the effect of ICT production on aggregate labour productivity growth is somewhat restricted by its small share in total value added. The broadband initiative in combination with the successful implementation of planned e-government measures is still expected to raise Austrian total factor productivity (TFP) in the long run, especially since the exceptional e-government initiative has made Austria's administration to be one of the most responsive in the EU. E-government initiatives aimed at raising public service productivity are expected to lower costs for individuals and companies therefore creating a competitive advantage. Eventually, an increase in economic growth can thus be expected, which could also positively affect employment demand. This last effect, however, is ambiguous, as increasing productivity is not always associated with an increase in labour demand, depending on whether the productivity increase is driven by rationalization or not.

### **Climate change and environmental policies**

Austria has set two priorities: fighting climate change and fostering the development of its environmental technology sector. These objectives are closely linked.

As regards efforts to mitigate climate change, since 2005 there has been a trend reversal in Austrian greenhouse gas emissions up to 2008 which is likely to have continued in 2009 not least due to the economic crisis. However, Austria so far has not reached the ambitious Kyoto target of a 13% reduction in greenhouse gases for the period of 2008 to 2012 compared with 1990. The economic effects of supporting projects aimed at combating climate change are considerable: one million euro of investment leads to the creation of between 14 and 17 jobs. A double, if not triple dividend can thus be gained from fighting climate change: investments

contribute to GDP growth, reduce greenhouse gases and considerably lower long-term operating costs e.g. of buildings or industrial installations.

As regards the development of the environmental technologies sector, Austria is a clear success story with quickly rising turnover (12%), exports (12%) and employment (6%) in this sector, outpacing total manufacturing. In addition, environmental technology producers show an above average research intensity although they tend to profit less from public R&D support.

Overall, there is a range of policies in place targeting the reduction of greenhouse gas emissions and the support of environmental technologies. However, the efforts started in the period 2005-2010 have to be increased, especially in view of the EU2020 targets regarding energy efficiency, renewable energy use and greenhouse gas emissions.

### **Foster Competition and SME Initiative**

The Austrian Stock Exchange has taken a number of measures to promote stock market activity; the privatisation schedule of the Austrian Federal Government has also contributed to strengthen the capital market, specifically by enabling a number of additional large companies to be listed at the stock market and thus increasing total stock market activity. In terms of stock market capitalisation in percent of GDP, Austria still ranks very low compared to other EU-15 Member States, however, suggesting a moderate degree of financial sector development. However, market-based systems are not necessarily better than bank-based systems in promoting economic growth; and looking at the financial sector development variable domestic credit to the private sector, Austria ranks much higher.

All FSAP Directives and POST FSAP Directives due to be transposed to national law by September 2010 have been successfully transposed into national Austrian law. It has become undisputable that there is a strong link between financial development, and thus the FSAP measures, and economic growth. Provided all FSAP and SEPA actions have been successfully implemented, the overall long-term growth rate may be affected marginally.

The Austrian economy has a high degree of openness. In the foreign trade sector, the export of manufactured goods still play a central role, while the foreign trade in services is relatively small. Compared to the rest of the World, the growth potential in respect to business services and tourism is not yet fully exploited in Austria. During the financial crisis, the Austrian exports dropped sharply, with the activities in the machinery/vehicle and the intermediate goods sector declining the most. In the current and next year, foreign trade will recover and will be a major source for growth in the Austrian economy. The Institute for Advanced Studies expects that exports will contribute 4.1 percentage points to the yearly growth of GDP this and next year. The internationalisation initiative will help to increase the competitiveness of the Austrian foreign trade sector, it will stimulate the export performance of SME's and knowledge based business services.

Due to the economic structure of the European Union targeted measures for SMEs are essential. Issues to be addressed in this context are the costs of financing, taxation of SMEs

and the lowering of administrative barriers. Current important Austrian measures have been in accordance with the Small Business Act. In recent years the number of Austrian SMEs has grown more than the EU average, even though employment growth was only moderate and slightly lower than the EU average. Value added increased at the same pace as the EU value added. The latest Observatory of European SMEs by the European Commission found that Austrian SMEs strongly rely on product differentiation and niche marketing. Tightening competition has been observed and firms were reporting to experience revenues from innovation.

### *Labour market policies*

In an international comparison, the Austrian labour market is in a good shape in terms of unemployment and employment. This was already the case before the economic and financial crisis and has not changed as the impact of the crisis on employment and unemployment was less severe than in many other European countries. According to Eurostat, the total unemployment rate was 4.8 percent in 2009, which was the second lowest value in the European Union. Even though the crisis has already resulted in an increase of the unemployment rate in 2009, this number is similar to values before 2005. The unemployment rate of men was slightly higher than that of women, which can partly be ascribed to the impact of the crisis which predominantly hit industries with a higher share of male employment. According to most recent Eurostat data, the seasonally adjusted unemployment rate declined to 4.3 percent in August 2010, which is the lowest value among all countries in the European Union.

Moreover, the long-term unemployment rate is relatively small in an EU-wide comparison. Still, attention should be paid to attenuate a possible increase of the long-term unemployment rate in the wake of the crisis. One should also keep in mind the development of youth unemployment in Austria. At 10 percent in 2009, the unemployment rate of people aged 15 to 24 years was still pronouncedly lower than the average in the European Union. However, it has almost doubled since 2000. This sharp increase can only to a small part be attributed to the impact of the crisis.

Employment rates are high in total and in most age groups. The total employment rate amounted to 71.6 percent in 2009, which is 6 percentage points above the EU-15 average and 3 percentage points higher than in 2005. Furthermore, female employment and activity rates are well above EU averages. With regard to older workers, however, a significant employment potential is not exploited as participation and employment rates remain at low levels. Considerable reform efforts aimed at lifting the effective retirement age have been successful to some extent. The employment rate of people aged 55 to 64 years rose from 28.8 percent in 2004 to 41.1 percent in 2009. Still, the employment rate of older workers is below the EU average and additional effort is needed to further raise participation of older workers in order to foster the sustainability of the social system.

Special attention should also be paid to the labour market outcomes for less educated individuals. The unemployment rate of people with less than upper-secondary education ("low-skilled individuals") amounted to 10.1 percent in 2009, which was more than twice the total unemployment rate. Even more so, the employment rate of low-skilled individuals aged 25 to 64 years only amounted to 55.6 percent (compared to 53.3 percent in 2005), which is close to the EU average. Given the much higher total employment rate in Austria, this outcome is not satisfactory.

According to our analysis, active labour market policy has contributed significantly to the low unemployment rate in Austria. We find that the measures considered in the simulation analysis decrease the total unemployment rate by 0.3 percentage points with a pronounced impact on unemployment of low-skilled individuals (-0.7 percentage points). Employment rises by 0.3 percent or 13,000 individuals, which is in line with an increase of GDP by  $\frac{1}{4}$  percent in the long-run. Evidence in *Felderer et al.* (2010) suggests that a reduction of social security contributions of older workers has contributed to an increase of their participation rate by 0.6 percentage points and additional total employment of around 10,000 individuals. A separate chapter in this evaluation is devoted to the impact of short-time work in Austria. According to OECD (2010a) estimates, short-time work has contributed to an additional 4,000 employed individuals.

Austria's performance in education and training is quite good in international comparison. The performance is better than the EU average in most of the indicators considered here. However, Austria features a low share of tertiary educated adult individuals and the indicators for educational attainment of adults and adult participation in life-long learning have not improved in the second part of this decade. In addition, other European member states perform better than Austria in several of these indicators.

### **Expected effects from meeting the EU2020 goals**

Meeting the Austrian goals within the framework of the Europe 2020 strategy in the areas of R&D intensity, tertiary education and employment would boost real GDP growth by 0.3 percentage points between 2010 and 2020. This is a considerable effect when compared with Austrian medium-term trend growth which hovers around 2 percent. The effects of meeting the goals continues beyond 2020, by 2050 the level of real GDP would be more than 5% higher in comparison with a no policy change-scenario.

The economic effects of meeting the climate change goals can only be illustrated as not enough is known to build a comprehensive model of the economic effects of combating climate change. Considerably positive economic effects are likely due to both investment effects and longer-term savings on operation costs (e.g. reduced energy bill). One million Euro invested in "green" measures broadly speaking leads to approximately 11 to 16 new jobs. As regards poverty, we estimate that achieving the employment goals may directly reduce the risk of poverty by about 20,000 persons. This may therefore help to achieve around 10 % of the Austrian goal for the reduction of social exclusion, which confirms the

importance of targeted support for specific groups of the population to achieve the ambitious targets. The present study also identifies bottlenecks to reach the EU2020 targets, i.e. areas where measures directed at removing the bottlenecks would be particularly effective in contributing to reach the EU2020 targets.

### *Identifying bottlenecks*

The following bottlenecks were identified:

- R&D intensity
  - High Concentration of business enterprise R&D
  - Growth dynamics of young innovative firms
  - University research
  
- Employment rate
  - Employment rate of women, the elderly and migrants
  - Low qualification of migrants
  - Weak private domestic demand
  
- Climate change goals
  - Buildings
  - Transport sector
  - Selected areas of manufacturing
  - Energy generation
  - Public R&D expenditure on clean energy technologies
  
- Tertiary Education
  - Ratio of students in secondary education with access to higher education
  - Dropout rate in higher education institutions
  
- Poverty
  - Poverty prevention
  - Fight against poverty

### *Macroeconomic effects of meeting the research, tertiary education and employment goals*

The cumulative macroeconomic effect of achieving the R&D, education and employment targets of the EU 2020 Strategy is simulated using the long-macroeconomic model of WIFO and IHS. If the targets are met, between 2010 and 2020 the growth of real GDP will, on

average, be 0.3 percentage points higher compared with the no-policy-change (baseline) scenario, with a positive growth differential of about 0.1 percentage points persisting beyond 2020. In 2020 the level of real GDP is 2.92 percent higher than in the baseline scenario, and that this difference will rise to 5.23 percent by 2050.

Higher economic growth is the result of higher labour productivity due to more R&D and better education and more favourable labour market conditions. In 2020, the participation rate is 2 percentage points above the baseline. The rate of structural unemployment is 0.6 percentage points lower in the long run. The increase in the employment rate and the decrease in the rate of structural unemployment have the highest impact on the growth rate of real GDP in the short and medium term. The positive development of labour supply, accompanied by modest wage growth, leads to an increase in labour demand. The increase in the employment rate of 2.6 percentage points reflects the slower dynamics of real wages. Due to the strong increase in employment, the compensation of employees increases by 2.6 percent.

The simulations show that achieving the R&D, education, and employment goals would yield considerable positive economic effects, especially in the long run: The growth of real GDP stays above the baseline and the increase in output accumulates to 5.23 percent. Participation and employment are significantly above the baseline solution. Following an initial slow-down in wage dynamics, the real wage per employee is 1.1 percent higher than in the baseline by 2050.

#### *Expected effects of meeting the EU2020 climate goals*

The assessment of the economic effects of reaching the 2020 objectives in Austria is constrained for several reasons. Although the overall framework has been determined and proposals have been developed the combination of instruments and measures has not been decided on yet and thus the costs cannot be estimated. Other relevant framework conditions are future economic growth, the development of energy prices and the results regarding global climate policy architecture after 2012.

Using the results from various studies that focused on the economic effects of certain instruments in environmental policy, the range of potential employment impacts from future investments can be illustrated. The technological categories assessed are thermal refurbishment of buildings, energy efficiency measures in the business sector and the generation of heat and electricity using renewable energy sources. Per million Euro of investment in thermal refurbishment between 11 and 14 people will be employed in the investment phase. When implementing energy efficiency measures in the business or manufacturing sectors the effects rise to 14 to 16 people employed per million Euro of investment. For energy generation the investment effect amounts to 13 to 14 people employed. These transitory employment effects are related to the one-time investment impulse in a certain area, i.e. the demand for specific goods and services to the amount of one million Euro.

However, in addition to the investment effects the impact of meeting the climate goals on the operating phase would also have to be taken into account. Especially for energy generation technologies based on biomass the operating effects over their service life can significantly exceed the investment effects.

#### *Expected effects of meeting the EU 2020 poverty goals*

An important innovation of the EU2020 strategy compared to the Lisbon strategy is that social inclusion has become an explicit priority. Overall the EU has set itself the ambitious target to reduce the number of persons at risk of poverty and social exclusion within the European Union by 20 Million persons. Despite a relatively favourable position of Austria in this respect since the share of population at risk of social exclusion is 6 percentage points below the average of EU-27, the Austrian government has set itself the ambitious target to reduce the risk of poverty and social exclusion by 15 percent of its current level. The Austrian strategy is in accordance with the idea laid down in the strategy Europe 2020 that increasing social cohesion will need a complementary approach that combines policies to enhance the growth potential with targeted policy measures to support specific vulnerable groups of the population.

Using an analytical tool developed at the Institute for Advanced Studies we estimate that achieving the employment goals of the Austrian government within Europe 2020 may directly reduce the risk of poverty by about 20.000 persons. This may therefore help to achieve around 10 % of the Austrian goal for the reduction of social exclusion, which confirms the importance of targeted support for specific groups of the population to achieve the ambitious targets of the Austrian government.



## 2. Introduction

The aim of this study is twofold. The first part presents an evaluation of the Austrian reform initiatives in the context of the Lisbon agenda between 2005 and 2010 with respect to growth and employment. The second part is an evaluation of the effects of achieving the Austrian goals of the Europe 2020 strategy also with respect to growth and employment.

At the Lisbon European Council in March 2000 the European Union set a strategic goal for the next decade "of becoming the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion".<sup>3</sup> However, the Midterm Review of the Lisbon Strategy in 2005 showed only limited success and the strategy was re-launched with a new focus on growth and employment.

A key element of the reform was the introduction of National Reform Programmes (NRPs)<sup>4</sup> to be drawn up by each Member State to outline economic reform measures. These reform programmes were based on 24 Integrated Guidelines and were tailored to the specific national needs and the situation of each Member State to promote growth and employment within a three-year planning period.

In October 2005 the first "Austrian Reform Programme for Growth and Jobs" was adopted by the Austrian Parliament. In accordance with EU targets it comprised three main areas: macroeconomic policy for growth and jobs, microeconomic and structural policy to foster EU growth potentials and employment guidelines for more and better jobs. Since then yearly updates have been published by each member state.

As the Lisbon strategy expires at the end of 2010, a follow-up strategy called "Europe 2020 – A European strategy for smart, sustainable and inclusive growth" was agreed upon at the June 2010 session of the European Council. The centrepieces of this strategy are three priorities suggested by the European Commission of a smart, sustainable and inclusive growth. To achieve this, the commission set out five headline targets<sup>5</sup>:

- Employment at 75% of the population aged 20-64
- 3% of the EU's GDP invested in R&D
- Meeting the *20/20/20 climate/energy targets*
- Share of Early school leavers below 10% and 40% of the younger generation with a tertiary degree
- 20 million less people at the risk of poverty

In order to strengthen the national "ownership" of the strategy, the European targets were being broken down into national targets. Furthermore, growth bottlenecks were identified for

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<sup>3</sup> European Council (2000), Presidency Conclusions, Lisbon European Council, 23 & 24 March 2000, point 5.

<sup>4</sup> European Council (2005), Presidency Conclusions of EC in Brussels, 22 & 23 March 2005, point II.

<sup>5</sup> European Commission (2010), Europe 2020. A strategy for smart, sustainable and inclusive growth, Communication from the commission, March, Brussels.

each country. Combating these bottlenecks should form a central part of any reform in the individual countries.

The Austrian government decided on the national EU-2020 goals on 5<sup>th</sup> October 2010:

- **Research and Development**
  - Increase in R&D spending to 3.76% relative to GDP
- **Education and Employment**
  - Reduction of Early school leavers to 9.5%
  - Increase in tertiary graduates to 38% of the population aged 30 – 34
  - Raising the employment ratio to 78% of the population aged 20 - 64, with special attention to elder employees, female participation and migrant young people
- **Energy and Environment**
  - Reduction of greenhouse gases by 21% in the part of the economy subject to the European Emission Trading Scheme
  - Reduction of greenhouse gases by 16% in the other sectors
  - Increase in the share of energy generation from renewable resources to 34% of total final energy consumption
- **Poverty**
  - Reduction of people at risk of poverty and social exclusion by 15% or 235.000 persons

The structure of this report is as follows:

Chapter 3 presents an assessment of the measures implemented in the context of the Lisbon strategy between 2005 and 2010. It is split into three major sections: The section macroeconomic policies discusses the development of public finances between 2005 and 2010 and describes the effects of the macroeconomic stimulus programmes implemented in 2009. The second section evaluates structural policy initiatives by the Austrian governments in the context of the Lisbon agenda between 2005 and 2010, including research and innovation policies, infrastructure policy, climate and environmental policies as well as competition and SME policies. The last section discusses the effects of Austrian labour market policies as well as education policy initiatives in the period 2005 – 2010.

Chapter 4 considers the expected economic, labour market and employment effects that result from meeting the Europe 2020 goals. The chapter is split into four parts: The first section presents a discussion of the identified Austrian growth bottlenecks. Section 4.2 provides simulation effects on growth and employment stemming from meeting the research, tertiary education and employment goals set by the Austrian government. Section 4.3 presents the expected effects of meeting the EU 2020 climate goals and the last section of chapter four discusses the implications of meeting the employment goals of the Europe 2020 goal for reducing poverty. Chapter 5 contains the conclusions.

### **3. Assessing the Lisbon Strategy: 2005-2010**

#### **3.1 Macroeconomic policies**

**Stefan Ederer (WIFO), Wolfgang Schwarzbauer (IHS)**

##### *3.1.1 Introduction*

Austria's main strategic target in the area of macroeconomic policy is the stability and sustainability of public finances. According to the National Reform Programme (NRP) for the period 2008 to 2010, fiscal policy follows a three-pillar strategy:

- Achievement of a balanced budget;
- Promotion of investments in the field of R&D, infrastructure, education and universities, as well as social protection to achieve more growth and employment;
- Implementation of structural reforms in the fields of public administration, competition policy and the labour market.

This three-pillar strategy aims to secure the state's financial capability in a sustainable manner, by creating a budgetary margin for future-oriented investments, by increasing the economy's growth potential, by improving Austria's attractiveness as a business location, by enhancing international competitiveness and by steadily reducing the debt and the interest burden.

The need for the three-pillar strategy is supported by the following arguments:

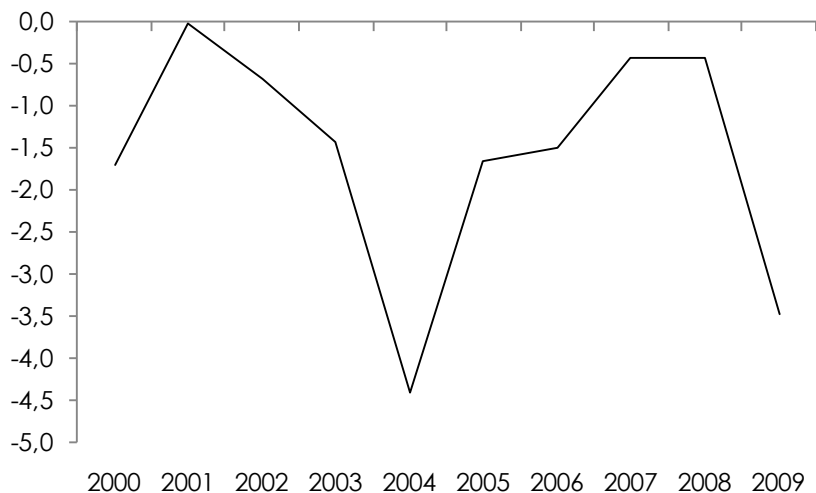
- A balanced budget reduces interest payments and consequently increases the room for manoeuvre for fiscal stabilization during an economic downturn.
- New challenges such as globalisation, climate change, population ageing, new technologies etc. put new demands on public financial resources for education, R&D and infrastructure. A reduction of the interest burden also facilitates higher expenditure in these growth-enhancing policy fields.
- If traditional government tasks are carried out more efficiently, this additionally increases the room for manoeuvre for both fiscal stabilization and higher expenditure for future growth.

##### *3.1.2 Current and prospected fiscal development*

In the NRP 2008-2010, as well as in the Stability Program 2007-2010, the Austrian government aimed for a balanced budget in 2010, thereby continuing to reduce the debt to GDP ratio. The Stability Program 2007-2010 however was based on a stable growth scenario. The financial and economic crisis of 2008/2009 led to an economic downturn. Austria's GDP in 2009 fell by 3.9%. In accordance with the European Recovery Plan, the Austrian government implemented two fiscal stimulus packages and brought forward the tax reform, which was originally to become effective in 2010, to 2009 (see below). These measures stabilized the

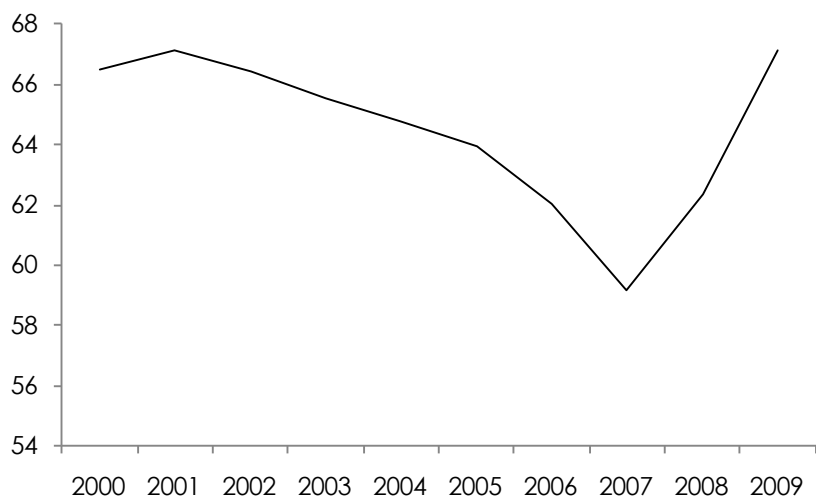
economy and dampened the recession. Consequently, government budget and public debt increased considerably.

Figure 1 : General government financial balance, 2000 – 2009  
Percent of GDP



Source: Statistik Austria.

Figure 2: General government debt, 2000 – 2009  
Percent of GDP



Source: Statistik Austria.

Figure 1 displays the Austrian general government deficit over the last decade. With the exception of 2004, which is an outlier due to a special treatment of debt payments for the Austrian Federal railways, the budget deficit came close to be balanced in 2007 and 2008 owing to favourable business cycle developments in these years as well as measures taken to

reduce the deficit. In 2009 the budget deficit increased again because of the two fiscal stimulus packages as well as the consequences of the global downturn.

Figure 2 displays the general government debt to GDP ratio from 2000-2009. From 2001 to 2007, it decreased steadily, falling below the benchmark of 60% in 2007 for the first time since 1992. In 2008 and 2009, due to the economic crisis, the debt ratio increased again.

Table 1 displays the development of key indicators of the Austrian public finances between 2005 and 2009. Total tax revenue as a percentage of GDP dropped slightly in 2006 due to the corporate tax reform in 2005 and has been increasing again since then. Total expenditure as a percentage of GDP sank in 2006 and 2007, rose again in 2008 and in particular in 2009 due to the fiscal stimulus packages.

Table 1: Real GDP growth and key indicators of public finances

	2005	2006	2007	2008	2009
			In Percent		
Real GDP growth	+2.5	+3.6	+3.7	+2.2	- 3.9
			Percent of GDP		
Total revenue	48.4	47.8	47.9	48.2	48.8
Total expenditures	50.2	49.4	48.5	48.7	52.3
General government financial balance <sup>1</sup>	-1.7	-1.5	-0.4	-0.4	-3.5
General government gross debt	63.9	62.1	59.2	62.4	67.1
Tax burden <sup>2</sup>	42.5	41.9	42.1	42.7	42.8

<sup>1</sup> According to Maastricht definition. <sup>2</sup>Total receipts from taxes and compulsory social contributions.  
Source: Statistik Austria, WIFO.

The latest Stability Program for the period 2009-2013 is based on the medium economic outlook for growth by WIFO. Due to the effects of the tax reform and the operation of automatic stabilizers in a continuously weak economic environment, the general government deficit is planned to amount to -4.7 percent of GDP in 2010. In the forthcoming years, the budget consolidation will be given high priority, starting in 2011. By 2013, the Stability Program aims to reduce the deficit to below the benchmark of 3 percent of GDP.

As planned, general government debt will continue to rise, albeit at a slower pace. Due to the consolidation measures undertaken, the change in the gross debt ratio will fall from 6.2 percentage points in 2009 to 0.7 percentage points in 2013. This will amount to a gross debt of 74.3 percent of GDP by 2013.

The Stability Program also includes a sensitivity analysis of the baseline scenario with respect to exogenous shocks. The first scenario builds on a stronger economic recovery than forecasted. Annual growth rates of real GDP are assumed to be 0.5 percentage points higher than in the baseline scenario. Under these circumstances, the general budget deficit would be reduced to below the 3 percent benchmark by 2012. The debt to GDP ratio would

actually start to decline in 2013. In the second scenario, with growth rates 0.5 percentage points lower than in the baseline scenario, the Maastricht reference value could not be reached by 2013. Gross debt would continue to increase to almost 78%.

### 3.1.3 Macroeconomic effects of the fiscal stimulus programs<sup>6</sup>

In response to the financial and economic crisis, Austria, like many industrialised and developing countries, has taken measures to stabilise financial markets and to mitigate the sharp decline in economic activity. Part of the federal government's stabilisation programme was the carrying-forward of income tax cuts into 2009, accompanied by two fiscal stimulus packages and a rescue package for the banking sector. In addition, the regional governments (Länder) have adopted their own programmes which focus on infrastructure investment.

Austria's stimulus measures include a mix of tax cuts and spending increases in 2009 and 2010. They can be broadly regrouped into four categories:

- increasing infrastructure investment (€ 1,435 million),
- lowering corporate financing costs (€ 2,080 million),
- increasing private household's disposable income (€ 5,953 million),
- increasing public consumption and subsidies (€370 million).
- Table 2 provides an overview of the size and timing of these packages. Overall, the two packages and the tax cuts amount to 3.5 percent of nominal GDP, rising to 4.2 percent of GDP if you include the measures adopted by the "Länder". Austria thereby figures amongst those countries which have adopted a sizeable stimulus programme as measured by the size of their GDP.
- The investment initiative of the federal government provides for an increase in building and infrastructure investment of € 1.4 billion over the period 2009-10, of which € 1,015 billion will have a direct budgetary impact. Asfinag and the ÖBB will invest € 450 million in transportation networks. Unlike the investment by the ÖBB, Asfinag's will be financed out of current revenues and therefore will not impose any further burden to the federal budget, whereas a small part of the ÖBB investment will have an impact on the budget. Further investment plans concern the insulation of buildings owned by the Federal Real Estate Agency (BIG) for the purpose of energy conservation as well as the construction or renovation of school, university and legal administration buildings.

The federal government programme creates incentives for private construction investment: Budget outlays of € 50 million are allocated to energy conservation activities in commercial buildings and another € 50 million are provided for private households. This will possibly generate an additional € 300 million in industrial and residential construction output in the

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<sup>6</sup> This section is a summary of *Breuss – Kaniovski – Schratzenstaller (2009)* and *Berger et al. (2009)*.

years 2009 and 2010. In 2009, € 10 million are earmarked for investment in broadband technology.

Table 2: Tax reform and measures included in stimulus "package" I and II

	2009	2010	
	Million €		
<i>Federal level (government programme)</i>	4,702.5	5,135.0	
Infrastructure investment	690	745	
ÖBB	175	175	Stimulus package I
Asfinag	50	50	Stimulus package I
BIG	355	520	Stimulus package II
Broadband services	10	0	Stimulus package I
Energy-saving renovation	100	0	Stimulus package II
Lowering of corporate financing cost	840	1,240	
Accelerated depreciation	0	250	Stimulus package II
Profit tax allowance	0	150	Tax reform
Third-party credits EIB <sup>1</sup>	200	200	Stimulus package I
Interest-subsidised ERP credits	200	200	Stimulus package I
Higher guarantee ceiling aws	400	400	Stimulus package I
Silent participations aws	40	40	Stimulus package I
Increase in private disposable income	2,987.5	2,965.0	
Income tax cuts	2,300	2,300	Tax reform
Family "package"	510	510	Tax reform
Tax deductability of sponsoring	100	100	Tax reform
Subsidised homebuilding	20	20	Stimulus package I
Regional employment "package"	35	35	Stimulus package II
Car scrapping premium	22.5	0.0	
Government consumption	120	120	
Compulsory pre-school year free of charge	70	70	Stimulus package I
Research and development	50	50	Stimulus package II
Subsidies	65	65	
Regional employment "package"	40	40	Stimulus package II
Globalisation "campaign"	25	25	Stimulus package I
<i>Länder</i>	1,073.2	1,007.7	
Infrastructure investment	876.8	876.8	
Increase in transfers	196.3	130.9	
<i>Total</i>	5,775.7	6,142.7	

Source: Federal Ministry of Economics, Families and Youth, IHS, WIFO. - Asfinag . . . Autobahnen- und Schnellstraßen Finanzierungs-Aktiengesellschaft, BIG . . . Federal Real Estate Agency, ÖBB . . . Austrian Railways. - 1 Small and medium-sized enterprises, research and development.

The measures designed to lower financing cost and strengthen corporate liquidity in Austria can be summarised into three groups: strengthening the equity base through silent partnerships, interest-subsidised loans and accelerated depreciation rules.

Among the measures implemented to support the purchasing power of private households, the tax reform brought forward into 2009 is the most important one. When fully implemented, the cut in tax rates will lower the tax burden on households by € 2.3 billion per year. Additional tax concessions for families will boost disposable income by € 510 million each year. A number of (tax) subsidies also belong in this category such as those relating to charitable donations, savings for private homebuilding, some elements from the employment "package" and the car scrapping premium. Finally, there are € 370 million in additional federal spending that is recorded partly under government consumption and partly as subsidies. This includes the commitment to co-finance a newly-introduced compulsory year of pre-schooling (free of charge for parents) and the reinforcement of funds for research by € 70 million and € 50 million for 2009 and 2010, respectively, as well as € 65 million per year for the regional employment "package" and the "campaign" for greater external economic openness.

The federal states are planning a series of cyclical stabilisation measures which in the simulations are captured in a simplified way either as investment or as an addition to private disposable income. The measures taken at the "Länder" level predominantly take the form of investment programmes, notably for construction; of lower importance are commercial subsidies and transfers to households. In 2009 and 2010, the Länder planned additional infrastructure investment of nearly € 880 million, and an increase in transfer payments of almost € 200 million in 2009 and € 130 million in 2010. Overall the Länder "packages" amount to € 1,073 billion in 2009 and € 1,008 billion in 2010, together totalling € 2,081 billion.

Both WIFO and IHS carried out ex-ante evaluations of the overall economic effect of the measures on the federal and regional level (with the exception of the banking rescue package). Furthermore, WIFO estimated the economic impact (spill-over) of the stimulus measures adopted by Austria's main trading partners on the Austrian economy in order to quantify the overall effect of all stimulus packages on the domestic economy.

For the simulation of the overall effect of the expansionary fiscal measures, WIFO (*Breuss – Kaniovski – Schratzenstaller, 2009*) used two different macroeconomic models: the impact of the measures taken by Austria's main trading partners on the domestic economy were estimated on the basis of the Oxford Economics Global Macro Model, the effects of the measures taken in Austria using the WIFO macroeconomic model. IHS (*Berger et al., 2009*) estimated the macroeconomic effects of the fiscal stimulus packages I and II, and of the tax cuts by the use of their macroeconomic model LIMA. The simulation results are presented in Table 3.

The model calculations suggest that the national fiscal stimulus measures dampened the recession in Austria by a cumulated 1.4 percent of GDP in 2009 and 2010, according to WIFO simulations and 1.2 percent, according to IHS. The major part of the dampening effect is



generated by the stimulus packages I and II as well as the tax reform, followed by measures by the Länder.

Table 3: Overall economic effects of stimulus measures by category

	Size <sup>1</sup>		WIFO		IHS	
	Million €	As a percentage of GDP of 2008	Deviation from baseline <sup>1</sup>		Deviation from baseline <sup>1</sup>	
			GDP, volume	Dependent active employment	GDP, volume	Dependent active employment
			In percent	Persons	In percent	Persons
Measures by Bund and Länder	11,918.4	4.2	+1.4	26,600	+1.2	21,300
Infrastructure investment	1,435	0.5	+0.3	7,200	+0.2	4,710
Lowering of corporate financing cost	2,080	0.7	+0.1	1,500	+0.1	1,090
Increase in private disposable income	5,952.5	2.1	+0.6	10,900	+0.5	9,220
Measures taken by the Länder	2,080.9	0.7	+0.4	6,900		
Stimulus programmes of main trading partners			+0.8	16,400		
Total			+2.1	41,500		

Source: WIFO, IHS. - <sup>1</sup> Cumulated over 2009 and 2010.

According to WIFO simulations, the impact on GDP of the stimulus measures secures 26,600 jobs and prevents a rise in the unemployment rate of 0.7 percentage points (in each case from a baseline without government measures). According to the simulations, the federal government balance weakens in 2010 by an amount of 0.5 percent of GDP. Infrastructure investment at the federal level raises GDP by 0.3 percent and employment in 2010 by a cumulated 7,200 persons. The measures to lower corporate financing cost boost GDP by 0.1 percent and employment in 2010 by a cumulated 1,500 persons. Measures regarding the increase in private disposable income increase GDP by 0.6 percent and employment by 10,900 persons.

According to IHS, the impact on GDP of the stimulus measures secures approximately 21,300 jobs and dampens the rise in the unemployment rate by half a percentage point. The simulations suggest a rise in the budget balance by 1.1 percent of GDP. Overall the driving force behind the effect on GDP results from those measures taken by the Bund (+0.87 percent GDP, 15,700 jobs). From all the measures taken, the increasing private disposable income has the greatest impact, mostly driven by the carrying forward of the income tax cuts into 2009 (+0.48 percent accumulated, 9,220 jobs). Infrastructure investments have the second largest

impact (+0.24 percent accumulated, 4,700 jobs). Lowering corporate financing costs will stimulate GDP by 0.07 percent and secure 1,090 jobs.

Table 4: Impact of stimulus programs adopted by Austria's major trading partners

	Percentage share in Austrian exports 2007	Gross domestic product, volume		
		2008	2009	2010
Cumulated deviation from baseline in percent				
Germany	30.0	+0.1	+0.9	+1.0
Italy	8.9	± 0.0	± 0.0	- 0.3
USA	5.0	+0.6	+2.3	+3.6
Switzerland	3.9	+0.1	+0.5	+0.1
France	3.6	± 0.0	+0.2	- 0.2
Czech Republic	3.6	± 0.0	+0.8	+0.6
UK	3.5	+0.1	+0.4	- 0.4
Hungary	3.5	± 0.0	- 0.5	- 1.0
Spain	2.9	+0.8	+1.2	+0.5
Poland	2.6	± 0.0	+0.7	+0.3
Japan	1.0	± 0.0	+0.8	+0.1
Other countries	31.4	+0.2	+1.0	+1.2
Export markets total <sup>1</sup>		+0.2	+0.8	+0.8

Source: OECD, WIFO. - 1 Impact on GDP, weighted by Austrian export shares.

In order to quantify the impact of stimulus packages adopted by Austria's main trading partner countries on the domestic economy, the increase in Austria's foreign markets has been estimated by WIFO using the OEF model. Table 4 shows the impact of fiscal stimulus programmes on the real GDP of Austria's main trading partners and Japan. Weighted by each country's export share in Austria's overall exports, demand on Austria's foreign markets is boosted from baseline by 0.8 percent each for 2009 and 2010.

The transmission effects for the Austrian economy have been estimated using the WIFO macro-economic model (Table 4). The increase in demand abroad leads to a cumulated gain in Austria's exports of 1.8 percent from the baseline in 2010. The higher exports trigger a positive income effect leading to an increase in private consumption and investment mostly in 2009. As imports will rise at the same time, the gain in real GDP is 0.8 percent from the baseline. Together with the effects of the national stimulus program, the total effect on real GDP is 2.1 percent. This secured 41,500 jobs in 2009 and 2010.

The long term impacts of the measures taken to increase private disposable income simulations were assessed using TAXLAB, a computable general equilibrium model developed by IHS. Results suggest that the decrease in the tax burden from these policies increase after tax wages by 1.8% in the long term. Due to the improvement of competitiveness triggered by decreases in wage costs as well as increases in labour supply, employment will increase by about 0.9 percent. As a result the unemployment rate might decrease by about 0.4 percentage points. This in the end will increase labour utilisation and lead to higher productivity of physical capital which will increase investment by about 0.8 percent. The increase in after tax wages will lead to a higher disposable household income boosting consumption by about 2.5 percent in the long term.

With respect to distributional effects of the tax reform the IHS also undertook an investigation using its micro simulation model ITABENA. Simulation results suggest a relatively equal increase in incomes across income groups, with the exception of the lowest income group. Family related measures benefit mostly lower and medium income households, with households with an income of up to 30,000 Euros benefiting the most.

#### 3.1.4. Summary

Austria's main strategic macroeconomic policy target in the context of the Lisbon agenda was the sustainability of public finances. Despite some progress in recent years, this target could not be achieved due to the effects of the financial crisis and the global economic downturn that hit the Austrian economy severely. In accordance with the European Recovery plan large fiscal stimulus packages were introduced including an income tax reform which led to substantial rises in the general government deficit as well as the general government debt. According to simulations of both institutes, these stabilisation measures were successful in combating the effects of the crisis, the GDP effects are estimated to range between 1.2 and 1.4 percent. As Austria is a small open economy its economy also benefited from fiscal stimulus packages of its main trading partners. According to WIFO simulations the effects of these increased Austrian GDP by an additional 0.8 percent. With respect to the long term and distributional effects of the Austrian tax reform IHS simulations suggest that the increase in incomes is relatively equal across all income groups and that household consumption will increase by about 2.5 percent in the long run. Family related measures of the stimulus packages as well as the tax reform were beneficiary mainly for households with an annual income of up to 30,000 Euros.

In its latest stability programme the Austrian government committed itself to reduce the budget deficit below the 3% threshold by 2013, acknowledging the benefits of sound public finances. General government debt is expected to rise, albeit at a slower pace. Due to the consolidation measures undertaken, the change in the gross debt ratio will fall from 6.2 percentage points in 2009 to 0.7 percentage points in 2013. This will amount to a gross debt of 74.3 percent of GDP by 2013.

## 3.2 Structural policies

### 3.2.1 Research and innovation policies

#### Jürgen Janger (WIFO)

Between 2005 and 2010 research and innovation policies were probably among the main priorities of government policy aimed at improving Austria's competitiveness and growth perspectives. The driving force behind research and innovation policies was and is the desire to change a "catching-up" country to a country at the forefront of research and innovation where its firms are market leaders in quality market segments. The main quantitative objective driving Austrian R&D and innovation policies was the goal of the Lisbon strategy, namely an R&D ratio of 3%. A lot of public support was placed behind this effort, in the form of direct and indirect funding for R&D: next to several funding schemes for R&D projects, a tax credit in the form of a cash grant amounting to 8% of firms' R&D expenditure was also used as a vehicle of government support. Many goals other than increased R&D intensity were pursued via various policies and support programmes. Examples of these programmes are:

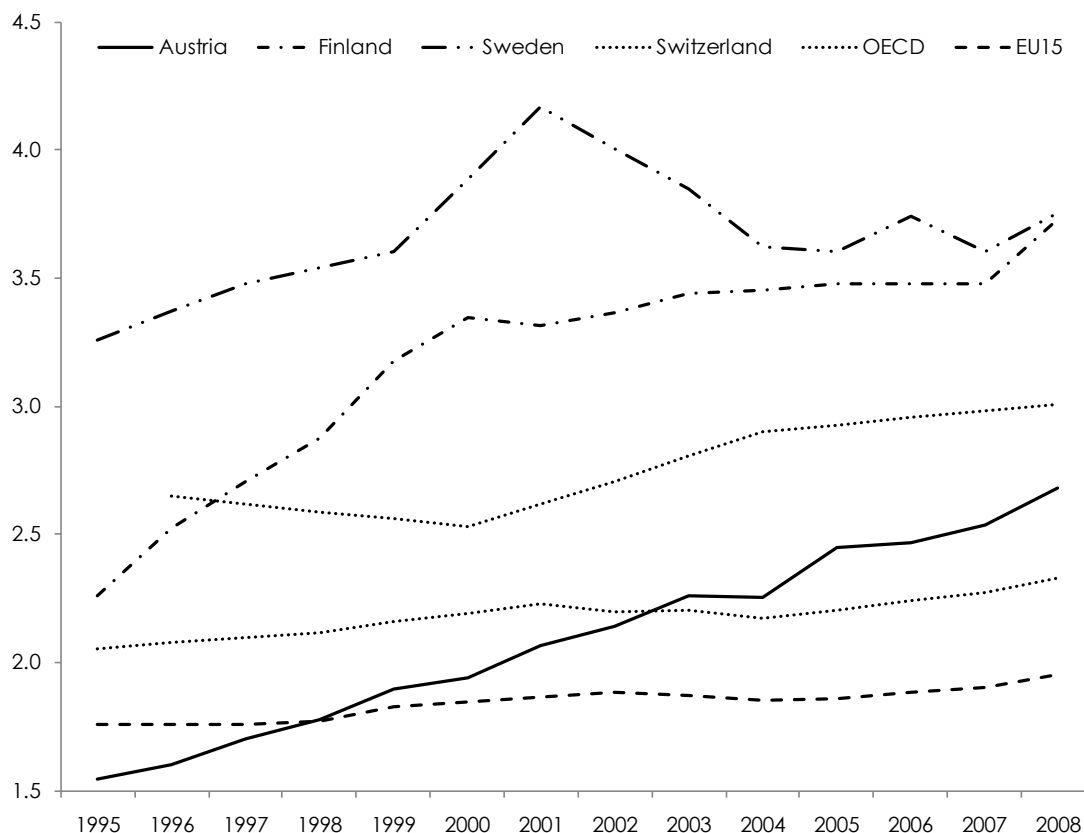
- Excellence in basic research (Institute of Science and Technology Austria IST-A),
- Cooperation of firms with universities (Kplus, COMET programmes) (excellence in applied research) and general cooperation for innovation (protect-, protrans-, COIN-schemes etc.)
- Increasing the share of innovative SMEs (e.g. innovation voucher scheme)
- Human resources for innovation (Expansion of the Universities of Applied Sciences, women in Science&Technology – fForte programme, femtech, excellentia etc.)

We will examine these policies in turn.

#### *Raising R&D intensity*

As Figure 3 shows the rise in the Austrian R&D ratio over the past 15 years was impressive, overtaking the R&D ratios of the EU-15, of the OECD and Germany. Only four countries are now ahead of Austria, namely the Scandinavian countries and Switzerland. The main driver behind this development was both firm and government spending on R&D. It has been a big success of Austrian R&D policy to incentivise firms to spend more on R&D relative to their turnover. This has been helped by increased competitive pressures arising from EU membership in 1995 and globalisation. As a result, it can now be said that Austria's catching-up process is finished and that as regards its R&D intensity Austria is now merging with the level of the most advanced countries at the forefront of research and innovation (Aiginger – Falk – Reinstaller, 2009).

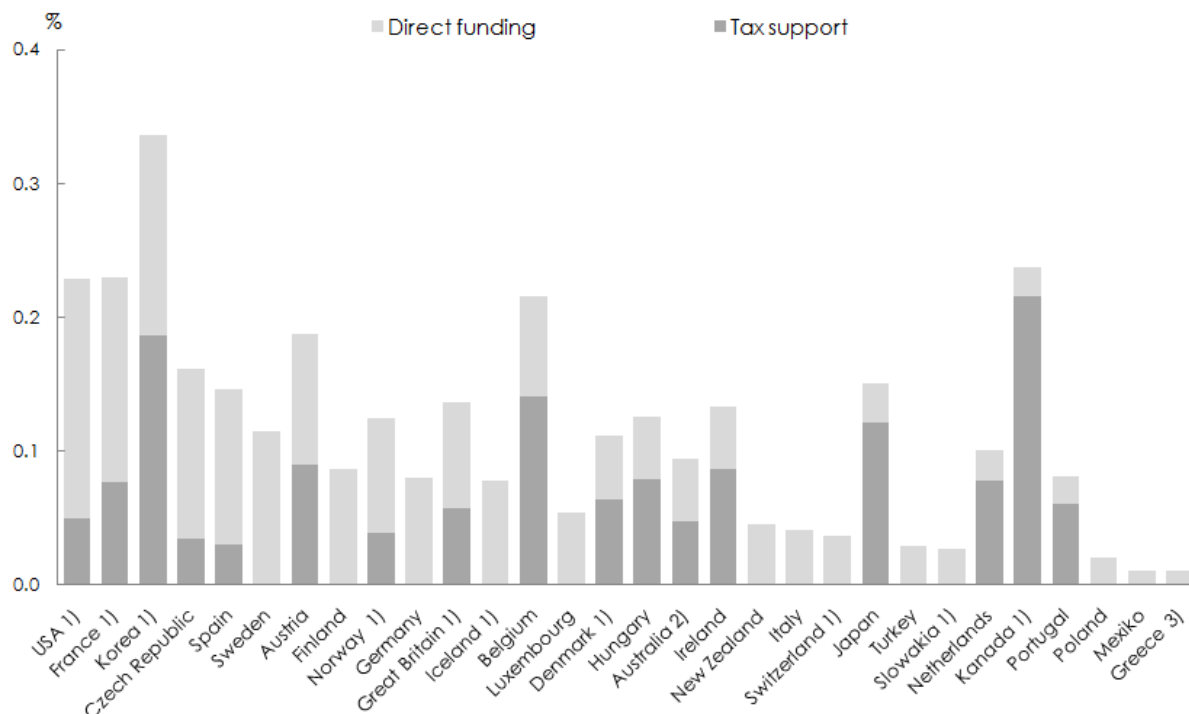
Figure 3: R&D ratios, 1995-2008\*



Source: EU2020, WIFO illustration. Internationally comparable data are only available until 2008. \*The Austrian R&D ratio for 2010 is estimated to be at 2.76%.

To assess more precisely the role of government spending and government policies in raising Austrian R&D intensity, we take a look at government funding of business enterprise R&D (BERD) (Figure 4), higher education R&D (HERD) (Figure 6) and at the growth of government funding for BERD and HERD between 2002 and 2007, based on the Austrian R&D surveys (Table 5). The Austrian R&D surveys are conducted every two years and become available three years later, so that 2007 is the most recent year where detailed information about R&D spending in Austria is available (global figures for R&D expenditure is estimated by Statistics Austria up to the year 2010). Figure 4 shows that Austrian government funding of BERD is now at a relatively high level in international comparison at close to 0.2% of GDP.

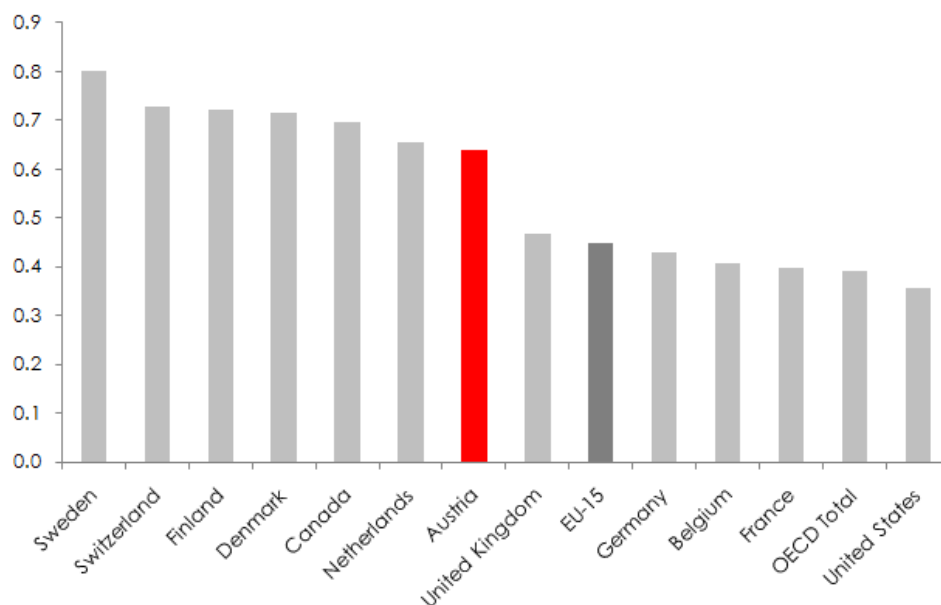
Figure 4: Government funding of business enterprise R&D, 2007  
direct funding vs. tax support, % of GDP



Source: OECD. Note: 1) 2008. - 2) 2006. - 3) 2005.

Turning to R&D performance in the higher education sector (HERD), Figure 4 shows the share of HERD expenditure in relation to GDP. The share of industry financing of HERD is on average low at 5-7% so that Figure 4 approximates government funding of HERD. Austria is well above the OECD and EU-average, but below other small, open European economies such as Sweden and Switzerland. In addition Austria's HERD expenditure is likely to be substantially overestimated as HERD is derived as 46% from total expenditure on tertiary education. The share of 46% follows from the R&D survey, but this value is questioned by university research insiders. In particular in study fields which suffer from a lack of ceilings on student numbers, it is improbable that half of tertiary education expenditure is devoted to research. This question can only be resolved once a full-costing model is in place at universities, allowing for the clear separation between research and teaching as well as other tasks.

Figure 5: R&D expenditure in the higher education sector as a share of GDP, 2008



Source: OECD MSTI. Canada and Finland 2009.

In comparison with government funding for higher education research, funding for BERD has grown by 48% since 2002 while funding for HERD has grown by 25% since 2002 (albeit from a higher absolute level). In absolute terms, annual funding for BERD has increased by approx. € 200 million, funding for HERD by approx. € 300 million. These figures have been the subject of recent discussions arising from the difficulty of accurately tracing the lost tax revenue from the R&D tax credit. Official R&D statistics sent to the OECD do not include R&D tax allowances because they are not counted as budgetary expenditures, but rather as "tax expenditures", i.e. they diminish revenues. However, the new version of the Austrian R&D tax credit works as a cash grant and from a purely statistical perspective is thus treated as direct government support. As a result, official OECD statistics showed an enormous increase of 185% for government funding of BERD between 2002 and 2007, as the R&D tax credit of 8% has mostly replaced the R&D tax allowances. Table 5 properly takes account of these issues, using data from the Ministry of Finance for the revenues lost due to the various R&D tax credits in place in 2002 and in 2007 and combining the figures with official R&D statistics from Statistics Austria.

In conclusion, government efforts to increase R&D intensity in Austria put relatively more emphasis on the business sector than on higher education.

Table 5: Increase in public funding for business enterprise R&D, 2002-2007

Year	Total R&D expenditure	1. Public R&D funding	Growth in %	Public support as a share of total BERD
<b>2002</b>				
Business Enterprise R&D (BERD)	3,130.9	403.5		12.9%
Institutes sub-sector	261.7	86.4		33.0%
Company R&D sub-sector	2,869.2	317.1		11.1%
Higher Education Sector	1,266.1			
<b>2007</b>				
Business Enterprise R&D (BERD)	4,845.9	597.9	48	12.3%
Institutes sub-sector	468.2	137.4	59	29.3%
Company R&D sub-sector	4,377.6	460.5	45	10.5%
Higher Education Sector	1,637.3			

Source: BMF, Statistics Austria, WIFO calculation.

#### *Growth effects from rising R&D intensity*

Which growth effects are to be expected from the increase in R&D expenditure? There is vast literature on the growth and productivity effects of R&D expenditure. For a recent survey on the rate of return to R&D, see Hall et al. (2009). Broadly speaking the empirical literature confirms growth theories emphasising R&D and innovation as major drivers of growth in advanced economies (see e.g., *Aghion – Durlauf, 2007*). The precise impact varies, however, according to the level of aggregation studied (firm, industry or country level) as well as the methodology used (e.g., calculation of rates of return vs. calculating the elasticity of productivity growth with respect to R&D capital stocks).

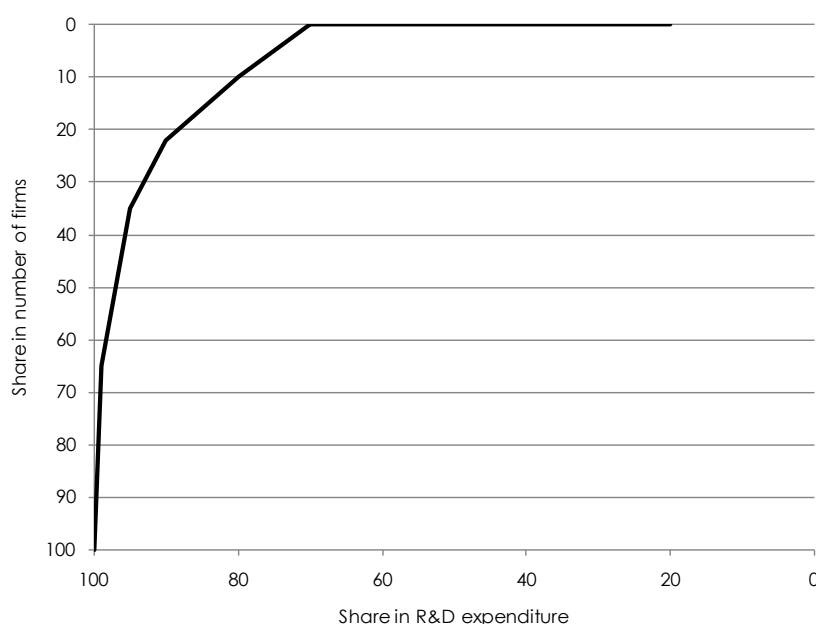
For illustrative purpose, we use the most recent estimates for Austria which are moderately higher than the average estimate of the impact of R&D on growth for OECD countries. Falk and Hake (2008) find that an increase of 1% in the Austrian R&D capital stock increases the level of total factor productivity by 0,16% (OECD average: 0.11%). The Austrian R&D capital stock increased by 167% from 2004 to 2010 and by 452% from 1995 to 2010<sup>7</sup>. Hence, taking the estimated impact of this increase in the R&D capital stock at face value, the increase of the Austrian R&D capital stock in the second half of the Lisbon agenda should increase the level of total factor productivity (TFP) by 26,8% (72,3% since 1995). All else equal, this should lead to a considerable transitional boost to GDP growth rates until the new level has been reached. However for assessing the overall growth effect of rising R&D intensity several additional factors must be taken into account.

<sup>7</sup> For details of the calculation of the R&D capital stock see *Falk – Hake (2008)*.



First, business R&D expenditure is concentrated among a relatively small number of firms. 33 firms are responsible for 50% of total business R&D expenditure. Growth effects may be less than expected as they are influenced by widespread diffusion and adoption of knowledge and technologies generated with the R&D expenditures (Figure 6). If firm expenditure is highly concentrated, the rising R&D intensity is not a general feature of the Austrian economy, but rather a specific feature of a limited number of firms, potentially limiting any growth effects from increasing R&D business expenditure. It also could make Austrian R&D expenditure rather fragile, e.g. when firms exit the market. This adds to the already fragile profile of Austrian BERD due to the high share of R&D financed by firms from abroad.

Figure 6: Distribution of Business Enterprise R&D among firms, 2007



Source: Austrian Research and Technology Report 2010.

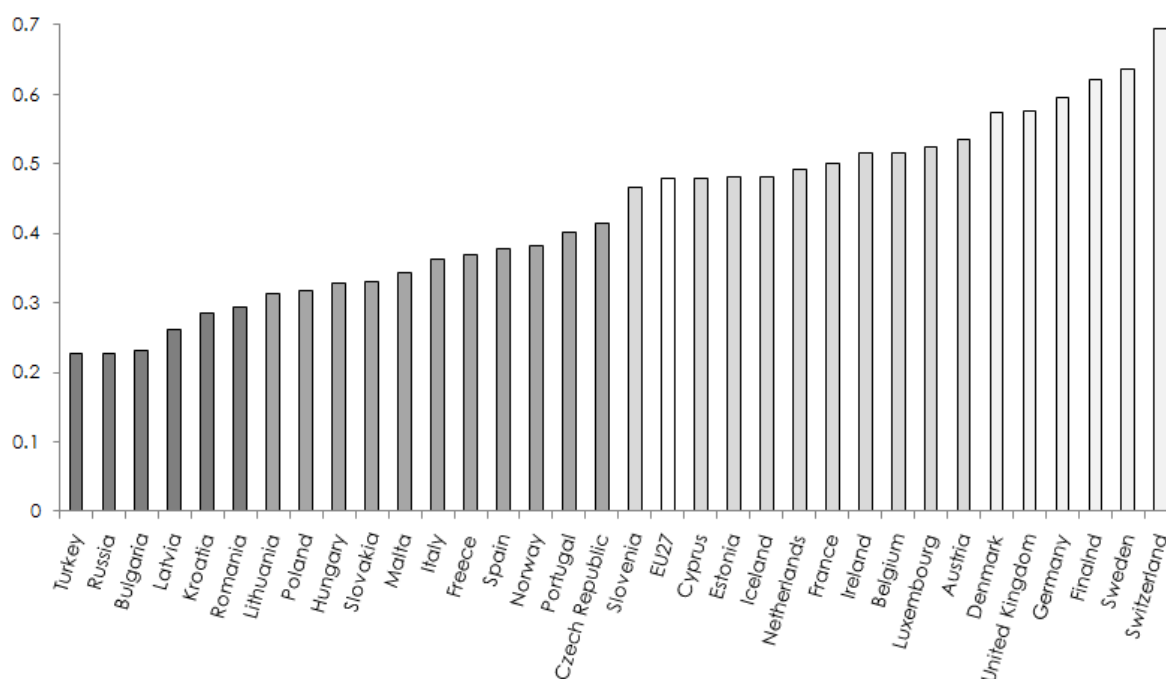
Second, the share of public R&D expenditure in total R&D expenditure now stands at an estimated 41%, 8 percentage points above the goal of 33%, mainly due to the crisis where public R&D expenditure increased heavily (+10% in 2009 and 2010) and business enterprise financed R&D decreased. The announced public consolidation plans of -1.3% for research and innovation make a further increase of public funding of R&D expenditure unlikely over the next years.

At the same time, *Reinstaller – Unterlass* (2008) show that the structural R&D potential of Austrian industry has somewhat been exhausted: every industrial sector features typical average R&D ratios across the OECD countries, e.g. the textiles sector has on average a much lower R&D intensity than the pharmaceuticals sector. Austria's sectors are nearly always clearly above the OECD average, so that further R&D intensity growth in existing

sectors seems to be compromised. The consolidation of public budgets and subdued industry R&D efforts will probably make growth in R&D intensity much less dynamic over the coming years, unless measures are taken to invigorate the Austrian science base and the growth of young innovative firms, which are two principal factors driving structural change. This leads to our third qualification of the success in raising Austria's R&D intensity.

Promoting and supporting R&D expenditure financially is just one necessary element of an innovation support system. The innovation process needs many other ingredients, among them most importantly human resources as well as private growth and risk financing. *Jaumotte and Pain (2005)* investigate the effects of innovation policies and framework factors on business R&D intensity for a sample of 20 OECD countries over the period 1982-2001. Framework conditions are shown to have as much and sometimes more impact on business R&D intensity as government funding. Without adequate framework conditions, the growth benefits of increased R&D intensity may only be reaped partly. The main determinants of innovativeness appear to be the availability of scientists and engineers, research conducted in the public sector (including universities), business-academic links, the degree of product market competition, a high level of financial development and access to foreign inventions. The effect of direct public financial support for business R&D is generally positive but modest, though it may be larger for cash-constrained firms.

Figure 7: European Innovation Performance 2009



Source: EIS 2009.

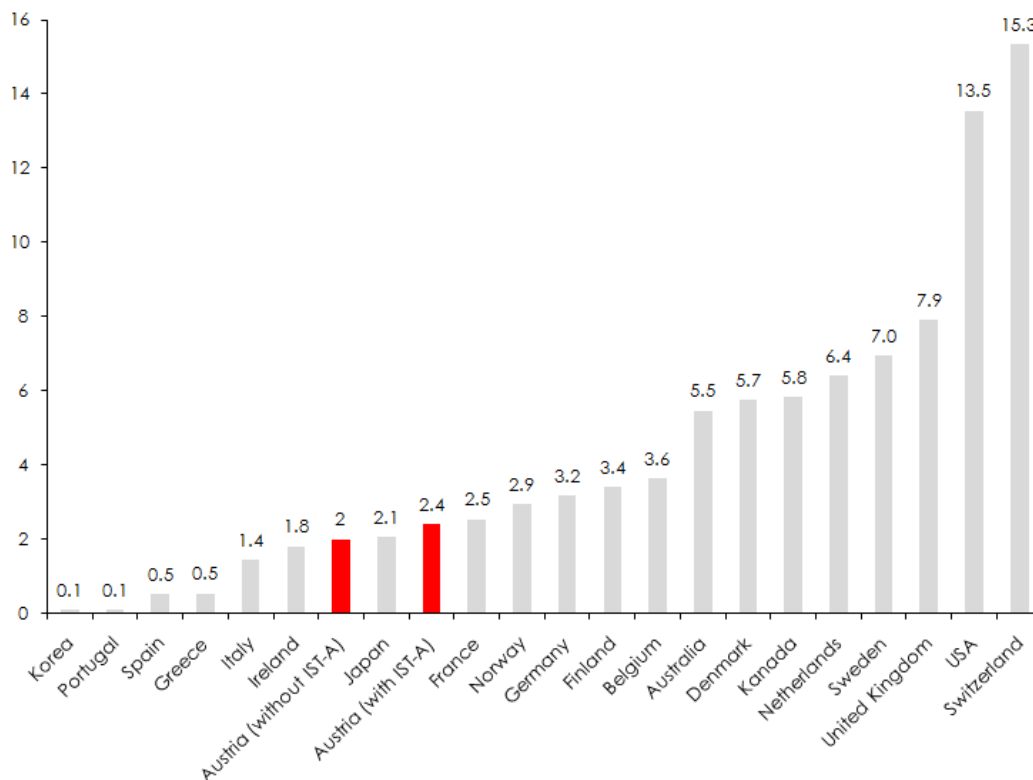
The European Innovation Scoreboard (EIS) contains some of these framework conditions along with measures of government funding of R&D. Figure 7 shows that Austria leads the so-called "innovation follower" group, unchanged from 2005. Ranking exercises based on a composite indicator such as the EIS always have to be interpreted with a lot of care. The EIS is sometimes interpreted as showing that Austria's firms are innovation followers, not leaders. However what it mainly shows in the case of Austria is its deficits in framework conditions such as human resources for innovation and private risk capital financing. Hence, the EIS shows that Austria's innovation system does not provide optimal support across the whole range of factors necessary for the innovation process. What holds back Austria's efforts to innovate and grow are mainly inadequate framework conditions? In the systemic evaluation of the Austrian innovation system, *Aiginger – Falk – Reinstaller (2009)* describe the focus of the research and innovation policies as narrowly focused on funding policies, while other important drivers of innovation are neglected. This may have a negative impact on the growth dividends flowing from increasing R&D intensity.

#### *Increasing the excellence of basic research*

The Institute of Science and Technology Austria (IST-A) was initiated with the aim of creating "a scientific flagship organization for research and postgraduate studies at the highest level". It is still in the process of building up its capacity, actively recruiting another 28-38 research groups in addition to the 12 groups who have already taken up work there. IST-A boasts a modern way of organizing research, based on graduate training, a tenure-track system with a competitive recruitment process at the stage of assistant professors and a planned technology park for potential business spin-offs. All the ingredients which favour high quality basic research are in place (for a study on organizational factors which drive quality in research see *Janger – Pechar, 2010*).

Hence, with continuous funding for the institute, it should ultimately be successful in terms of high quality scientific research, even if potential synergies with other excellent research institutes in Vienna may not be fully being reaped due to IST-A's location outside Vienna. Figure 8 shows that IST-A has already added three highly cited scientists to Austria's total number. However, this number per million of population is still far away from countries such as the Netherlands, Sweden, and Switzerland, typical countries of comparison for Austria since they are also small, open and advanced European economies. Even if all of the new research group leaders at the IST-A are highly cited scientists, this will bring Austria's number of highly cited scientists to 70, 45 below Switzerland. As a result, IST-A on its own will have difficulties assuring the excellence of basic scientific research in Austria. At the established Austrian universities, many organizational, structural and financial characteristics of high quality research environments are missing. In conclusion, IST-A is a very important and successful newcomer to Austrian scientific research. However, the necessary framework conditions for excellent scientific research in the overall university landscape have not yet been laid.

Figure 8: Performance of university research in international comparison: highly cited scientists per million of population, 1981-2007



Source: ISI Highly Cited.

#### Fostering R&D and innovation cooperation

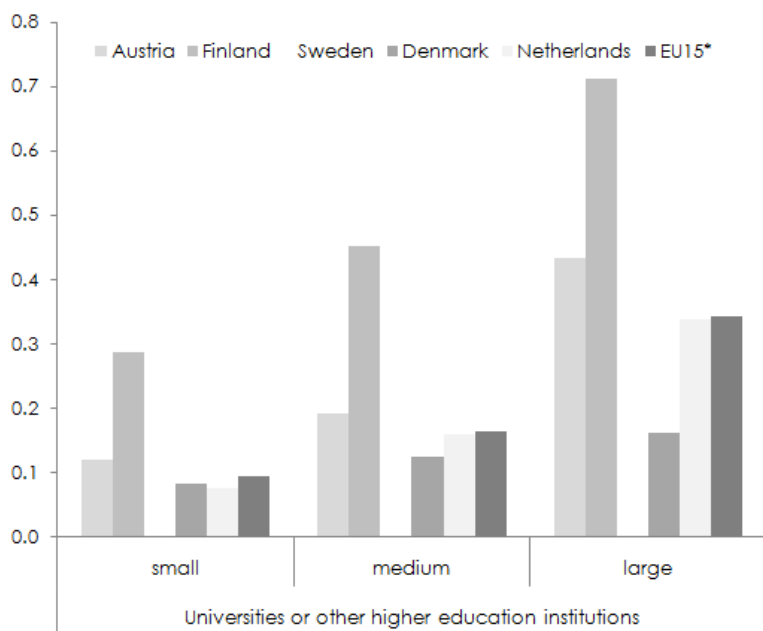
Fostering cooperation on innovative efforts is being encouraged through the use of several types of programmes in Austria: the first type is the Kplus and then COMET programmes, as well as the BRIDGE programme, which all aim at linking university research with business research to produce excellent applied or "pre-competitive" research results. The programme Kplus was set up at the end of the 90ies to counter the diagnosed lack of business cooperation with universities in Austria. Its successor COMET goes one step further, aiming at establishing research centres of international scope and quality (the so-called K2 centres), while leaving room for smaller cooperation platforms (K1 and K-centres). Business-science links are growing in importance as research becomes more complex, specialized and science-based, requiring firms to access scientific knowledge more frequently to maintain their competitive advantage.

The second type of programme such as protec, prokis or their successor COIN aims to foster collaborative innovation of smaller firms which are not necessarily "high-tech". These firms often lack proper R&D departments because of their small size which limits activities causing

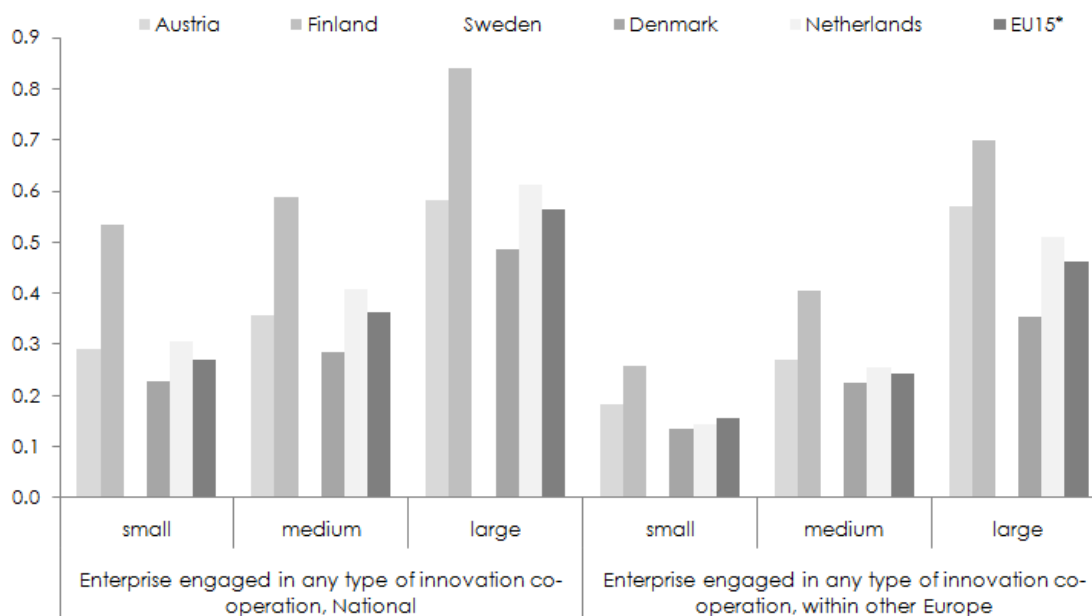
considerable fixed costs such as R&D. Hence, they can gain a lot from collaborating with other firms or research institutes.

Figure 9: Cooperation in Innovation, by size class (2004-2006)

a) In Universities



b) In any type of cooperation



Source: Eurostat, WIFO illustration.

There are many more cooperation programmes and initiatives. However it is beyond the scope of this study to fully treat all cooperation support schemes. To illustrate the success of these efforts to encourage collaborative innovation Figure 9a and 9b show the cooperation pattern of small, medium and large firms based on the European Community Innovation Survey (CIS). Figure 9a portrays the share of firms by size class which during the relevant years of the survey maintained cooperation on innovative activities with universities.<sup>8</sup> While Finland is clearly at the top of this ranking, Austria comes second, ahead of "innovation leader" countries such as Sweden and Denmark. Hence, the lack of cooperation between firms and universities observed in the 90ies has clearly been successfully eliminated, in particular for large firms. Small and medium firms show less intensive cooperation patterns with universities, as in other European countries.

Figure 9b shows the share of firms by size class engaged in any type of innovation cooperation, at the national and the international level. At the national level, Austria is slightly above the EU average and slightly below Sweden and the Netherlands. At the international level however, medium and large firms are second only to Finnish firms as regards cooperative behaviour in innovation activities. This confirms the view that efforts aimed at increasing innovation cooperation have been broadly successful in Austria.

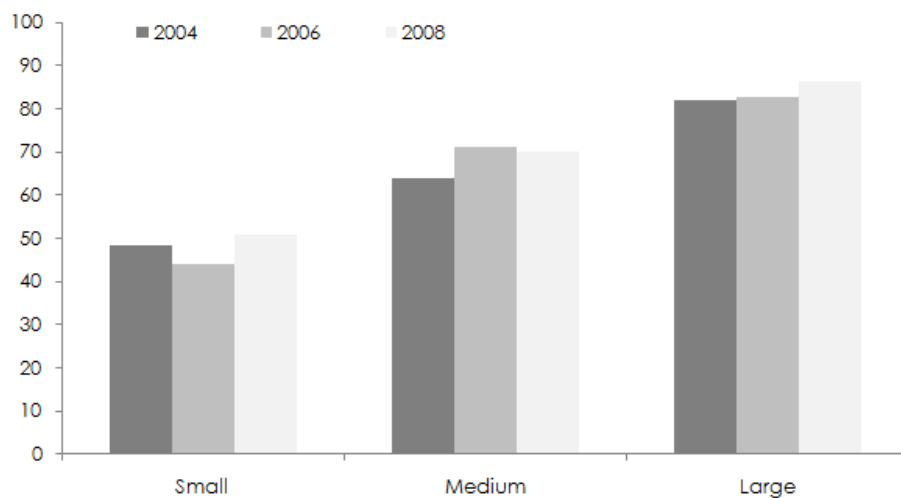
#### *Innovation in SMEs*

Another thrust of government efforts aimed at boosting innovation and R&D in Austria are programmes aimed at motivating firms to take up innovation or R&D efforts for the first time, such as the innovation voucher programme. Such programmes or funding schemes are very important in the Austrian context because the number of firms actually carrying out substantial R&D activities is small, as shown above. Figure 10 indicates that efforts to foster the "extensive margin" of non-R&D innovative activities have been much more successful. The share of firms engaged in innovative activities is high and generally growing over time as measured by the European community innovation survey (Figure 11). It has to be borne in mind though that the CIS is not panel-based, i.e. that not always the same firms are asked, which makes comparisons over time difficult. Figure 10 compares the share of Austrian SMEs having introduced a process or a product innovation in the years 2004 to 2006 (more recent data are not available for a large sample of European countries). Austria ranks third behind Switzerland and Germany. This might be one factor explaining Austrian economic success, e.g. in terms of increasing exports: even if R&D activities are concentrated on a limited number of firms, non-R&D innovative activities are relatively widespread.

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<sup>8</sup> Business-science links or university-industry cooperation can also be measured by the share of higher education R&D financed by business. In Austria, this figure is severely flawed as the Kplus or COMET centres are legal entities classified as businesses rather than university research institutes. Hence, all the funding from businesses for COMET centres is counted as business enterprise R&D while in fact universities play a central role in COMET centres.

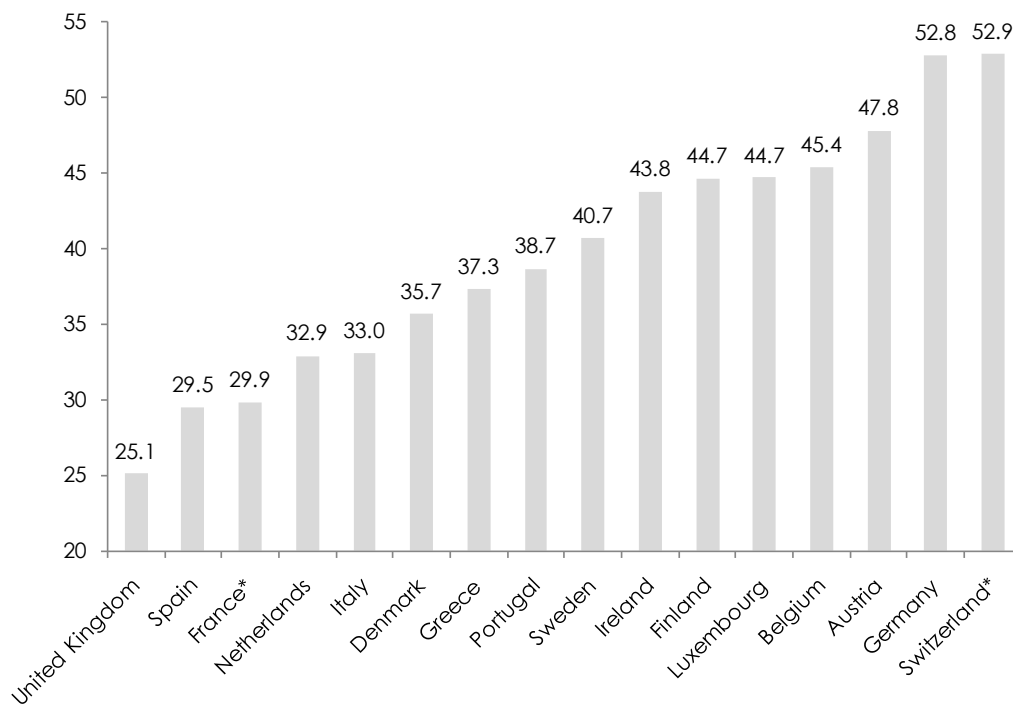
Figure 10: Share of Innovative Firms (2004-2008)



Source: CIS (EuroStat), WIFO illustration.

Note: small = 10-49 employees; medium 50-249 employees; large = 250+ employees.

Figure 11: SMEs introducing product or process innovations (in % of SMEs)



Source: EIS 2009.

Note: \* = data from 2004.

### *Human resources for innovation*

Last, but not least, we examine the efforts made to improve human resources for innovation. In the years 2005 to 2010, there were mainly two objectives mentioned in the Austrian national reform programmes: the expansion of the Austrian Applied Universities and increasing the share of women in scientific and technological occupations with programmes and funding schemes such as fForte, femtech, excellentia etc. Human resources are crucial for implementing research and innovation based growth strategies. *Jaumotte and Pain (2005)* estimate that it may be difficult to significantly raise domestic R&D activities in the short run because the supply of researchers is relatively inelastic.

Table 6 summarises indicators on tertiary graduates in science and technology and "other" tertiary graduates. This is because tertiary education is important for soft skills related to innovative activities such as problem solving, communication and the continuous updating of skills. The share of tertiary graduates in the entire working-age population is low at 18%; among the people at typical graduation age there is some increase in participation in tertiary training at 22% (columns 3 and 4 in Table 6). This is, however, still low when looking at other countries which have massively increased tertiary education over the last few decades. For example, while in Sweden the share of tertiary graduates in the entire working-age population stands at 36%, its share among people at typical graduation age has increased by a full 12 percentage points.

The number of tertiary graduates in science and technology has grown considerably in Austria, certainly partly due to the expansion of the Universities of Applied Sciences (column 1 of Table 6). The level is still below some other advanced countries though. The gap can be partly explained by vocational upper secondary schools ("HTL" and others) which provide a five-year training in technical professions. They do not count towards statistics on tertiary graduates. There is a longstanding debate in Austria whether HTL-graduates are equivalent to graduates of shorter university courses in science and technology. Since there are no detailed studies, there is room for speculation; *Janger (2009)* argues that students at the HTL do not come in contact with proper university research and are much more likely to focus early in their life on narrow specializations, which will make HTL-students useful for experimental development and incremental innovative activities. However, they will lack skills and training to engage in more science-based basic and applied research which expands the knowledge base of the economy.

The number of female graduates in science and technology has also grown considerably, but again the level is significantly below that of other advanced small European countries. The increase in female S&T graduates mainly comes from the life sciences, while there are few women in engineering.



Table 6: Indicators for human resources in innovation

	(1)		(3)		(3)	(4)	
	Tertiary Graduates in Science&Technology per 1.000 of population aged 20-29 (ISCED 5-6) §		PhD-Studies (ISCED 6) §§			Share of tertiary graduates in population aged 25-64	
	Graduates in total		Female Graduates				
	2000	2007	2000	2007	2007	2007	
<b>Austria</b>	<b>7.2</b>	<b>11.1</b>	<b>2.9</b>	<b>5.3</b>	<b>1.8</b>	22.1	18
Germany	8.2	11.4	3.6	6.9	2.3	23.4	24
Switzerland*	15.1	17.9	4.6	6.4	3.3	31.4	31
Denmark	11.7	16.4	6.8	11.9	1.3	47.3	32
Sweden	11.6	13.6	8.9	11.1	3.3	48.5	36
Finland	16	18.8	7.6	9.2	2.9	39.9	31
OECD	n.v	n.v	n.v	n.v	1.5	38.7	28
EU15/EU19	10.1	n.v.	6.3		1.7	36.7	24

Source: §: Eurostat Database §§: OECD Education at Glance 2010, Table 3.6; §§§: OECD STI Scoreboard 2009.

Table 7 assesses the share of women out of total researchers in international comparison (column 1) and the qualification profile of male and female researchers in Austria (column 2). There was virtually no change in the share of women out of total researchers between 2004 and 2007, the last year for which the R&D survey is available (the R&D survey 2009 will be published in 2012). The share of women is low compared with other countries. The ministries are fully aware of the challenges involved in trying to raise the share of women in S&T occupations. There are regular monitoring reports and studies on the situation of female researchers such as the gender booklet (BMVIT, 2009) and another study by BMVIT on career perspectives of young researchers (2010). The ministry for transport, innovation and technology has already reformed its support for female researchers.

In conclusion, the crucial area of human resources for innovation has benefited from a number of initiatives during the second half of the Lisbon Strategy which have contributed to improvements in several areas. However, more definitely needs to be done to fully exploit Austria's potential for female human resources in innovation.

Table 7: Share of women in total researchers, full-time equivalents; qualification profile of researchers in Austria, 2007

	(1) Share of women in total researchers		(2) Qualification profiles of Austrian researchers 2007				
	2007	2004 vs. 2007	Males		Females		
				Occupation in %		Occupation in %	2004 vs. 2007 Change in %-points
Austria	23,7	0,1					
Germany*	26,0	-1,2	Researchers	62	Researchers	52	5
Sweden**	29,1	-0,1	Technicians	31	Technicians	29	0
Denmark*	36,8	0,1	Other support staff	7	Other support staff	19	-5

Source: OECD iLibrary, WIFO calculations. Note: \*=2003 vs. 2005; \*\* = 2005 vs.2007

### Detailed evaluations

Research and innovation support policies are probably the most evaluated area of policies in Austria. Even in European comparisons, Austrian research and innovation support policies are evaluated very frequently (BMVIT, BMWF, BMWFJ, 2010). It is beyond the scope of this report to make detailed references to all the evaluations. The platform fteval ([www.fteval.at](http://www.fteval.at)) stores most of the evaluation studies so that the information is easily retrievable.

This is why we want to focus only on last year's systemic evaluation of the Austrian innovation support system (Aiginger – Falk – Reinstaller, 2009). Overall, this evaluation concludes that the support and funding system has worked well in the past and that it has lived up to its task of supporting the catching up process of the Austrian economy towards higher R&D intensity of economic activities. Although the high number of funding schemes led to fears of a "programme jungle" before the evaluation, the comprehensive survey among users of the innovation support system reached the conclusion that users are satisfied and know the system well.

On the downside, the complexity of the support system is less a problem for users than for its administrators. The governance of the innovation support system features a series of problems, such as low reactivity to outside trends and changes, low manoeuvrability and a narrow focus on funding schemes to support innovation, rather than looking at ways to boost innovation from a more comprehensive angle, including e.g. framework conditions such as competition, human resources and private innovation financing.

Moreover, due to the high number of funding schemes, firms rarely change their existing R&D plans according to funding possibilities, rather they plan R&D activities first and then look what public funding they can get for it, increasing the potential for deadweight loss in government funding of R&D activities. Finally, the mission orientation of the Austrian government support system is rather weak, i.e. grand challenges such as climate change, population ageing and resource constraints play a rather minor role in funding schemes (see chapter on environmental policies). As a result, there is definitely room for improvement, even if overall the innovation support system has worked well.

### *Summary and overall conclusions*

First, with the exception of R&D intensity, assessment of the Lisbon Strategy in Austria suffers from a lack of data. The most recent data are often only available for the year 2007, so that a final assessment will only be possible in around two or three years.

Second, the main goal of efforts within the framework of the second half of the Lisbon Agenda 2005 to 2010 was reaching the European objective of an R&D intensity of 3% (R&D expenditures relative to GDP). This objective has almost been reached with Austria's R&D ratio standing at an estimated 2.76% in 2010. No other country in the EU has made such dynamic progress towards the Lisbon objective for R&D intensity. The increase of the Austrian R&D capital stock in the second half of the Lisbon Agenda should substantially increase the level of total factor productivity (TFP) by approx. 25 to 30%, which in turn should boost GDP growth rates until the new level has been reached. A higher R&D intensity and according expansion of the R&D stock should also stimulate growth in the long run.

This very positive assessment needs to be somewhat qualified due to a few problem areas which may reduce the expected growth effects from increased R&D intensity. To begin with, R&D expenditure in the business sector is highly concentrated with 33 firms responsible for 50% of total R&D expenditure. Furthermore, the share of government spending on R&D reaches 41% in the wake of crisis, considerably higher than the target of 33%. Taken together with the exhaustion of the R&D potential in Austria's industrial structure, future R&D intensity growth will probably be much more limited. Last, but not least, the focus of government support was on funding policies, while other important ingredients for the innovation process receive less support. Framework conditions for innovation such as the availability of trained scientists and engineers, private risk financing and competitive market environments matter for rising R&D intensity to be translated into higher economic growth.

Third, the implementation of the Lisbon Strategy in Austria pursued a number of additional objectives. To foster excellence of basic research, the Institute of Science and Technology Austria (IST-A) was set up. This institute is well designed and it can be expected that once it has reached full capacity it will be a major contributor to Austrian scientific research. However, IST-A needs to be complemented by reforms targeted at all universities to increase the excellence of basic research if Austria wants to reach the level of other European advanced countries, as IST-A by itself will be too small even when it has reached full capacity.

Many funding schemes were targeted at fostering cooperation on innovation, where deficits were observed in the 1990ies. The available indicators show that government efforts have been successful and that weak cooperation on innovation has been eliminated. A similar claim can be made for non-R&D innovative activities by SMEs, where Austria can boast high and growing levels in Europe. Last, but not least, efforts at improving human resources for innovation have triggered some positive trends, but overall the observed gaps for female

researchers and for the availability of human resources for innovation in general will also challenge Austrian innovation and education policies over the next ten years.

### 3.2.2 Infrastructure policies

#### **Karin Schönplugg, Wolfgang Schwarzbauer (IHS)**

##### *Introduction*

Infrastructure, in general, is considered to be of great importance as an engine for growth. The OECD acknowledges this fact by calling infrastructure a factor directly related to economic growth (compare *OECD, 2003*).

A major field of activities in the Austrian NRP focused on improving the Austrian traffic infrastructure. There is a large number of studies on the effects on transportation infrastructure indicating a positive growth effect of infrastructure spending. The reason for this is that an improved transport infrastructure will reduce transport costs and will divert economic resources from transportation to more productive uses. Thereby overall productivity increases which has a positive effect on economic growth. Through reducing costs and strengthening productivity, transport infrastructure will have a positive effect on the whole country as an attractive location for enterprises. These positive effects are well documented in the literature. The aggregate effects of public infrastructure on economic growth vary between 0.08 and 0.65 (compare *Romp and de Haan, 2005*).

Apart from traffic infrastructure the Austrian NRP also included initiatives to improve ICT infrastructure with a focus on broadband infrastructure and E-government. As was described in IHS 2006, orthodox growth theory suggests that the surge in productivity growth in the USA since the mid-1990s was related to high overall investment in, and effective use of, ICT, especially in the services sector, a development that was not prevalent in Europe at that time. Technological advancement has been proven to be crucial for the rate of productivity and growth in the economy. ICT affects economic growth through three channels: investment in ICT, its production, and also the productive uses to which it is put. Especially investment in ICT is important by adding to capital deepening (capital made available per worked hour), and, in successful implementations, to total factor productivity. The relationship between ICT investment as a percent of GDP and average ICT capital contributions to GDP growth was shown to be positive for the EU15 countries and the USA in the period 1995-2004. (compare *European Commission, 2006*) Therefore differences between countries in the impact of ICT on economic growth can be attributed to either differences in investment levels or investment growth.

But public infrastructure will not only have a positive effect on the long term growth prospects of an economy. In face of the dramatic downturn in economic activity following the global financial crisis in the last 2 years, a lot of government programs acknowledged the short term effects of public infrastructure investment to stimulate aggregate demand and thereby keep workers in employment. The IHS and WIFO institutes estimated that additional infrastructure

investment by the federal government, the Bundesimmobiliengesellschaft, the ÖBB and Asfinag smoothed the cyclical downturn, but with different implications on the budget position of the federal government (compare the chapter on Macroeconomic Policy).

#### *Macroeconomic effects of infrastructure investment*

##### Traffic Infrastructure

##### **Current Situation and Effects of NRP measures**

According to the ÖBB Infrastruktur AG and Asfinag AG Austria spent approximately 14.4 billion € on transport infrastructure between 2005 and 2009. (for an annual breakdown see Figure 17 in the appendix, unfortunately figures for transport infrastructure investment in 2010 were only available for Asfinag AG). Out of the 14.4 billion €, 9.8 billion € were used for the construction of new traffic infrastructure. About two thirds of the 9.8 billion € were dedicated to new railway infrastructure (64%) and the remaining 36% were used for road traffic infrastructure. The original plan, as laid out in the Generalverkehrsplan in 2002, was to use the main part of these funds to either improve the connectivity to the new accession states and/or Trans European Networks (Brenner Basistunnel, railway link Vienna-Bratislava etc.). In contrast to the original plan new priorities were set. These included measures to improve infrastructure along the TEN Axis 17 and the Baltic-Adriatic corridor.

In the past five years some of these prospected prioritisations have been partially completed. Along the TEN Axis 17 substantial progress has been made to improve the connection between Vienna and Salzburg as well as Vienna and Bratislava. To ensure an efficient channelling of traffic through the Vienna region, the construction of the new central station of Vienna has started in November 2009. According to the plans a preliminary start of operations is scheduled for the end of 2012. Apart from European TEN projects the new double tracked operation of the Tauernbahn between Salzburg and Villach, opened in 2008, meant an important extension of capacities from Germany to the Balkans. These railroad related measures can be considered to have a substantial impact on the Austrian growth potential since they improve the integration of Austrian regions into the European economy. Furthermore they also foster the integration of Austrian regions with those of the new EU Member States bordering Austria.

With respect to road infrastructure substantial progress has been made in the last years to improve the connection of Austria to its eastern and northern neighbours. The opening of the motorway between Bruckneudorf and Kittsee (Vienna - Bratislava) in 2007 has to be mentioned in this respect as a very important improvement of road infrastructure, as it removed a notorious bottleneck between Vienna and Bratislava. Furthermore the A5 from Vienna to Brno in the south-east of the Czech Republic as well as the S3 to the north have been extended further in 2010 and 2009 respectively.

To better divert the increasing traffic volumes running through Vienna a motorway ring (Regionenring) around the greater Vienna region is currently under construction. The opening of the S1 in 2007 as a part of this ring in the south of Vienna improved east-west connectivity

as it reduced the traffic running through Vienna's notoriously congested motorway A23. In the north-west of Vienna this ring is about to be completed with the opening of a new motorway bridge across Danube at the end of October 2010. According to Asfinag AG, 177 out of planned 203 kilometres have already been completed. This represents an important step for the future, as due to increasing traffic volumes it is quite likely that congestion will become a major problem in the greater Vienna region. This is therefore in accordance with the policy objectives for sustainable transport (compare European Commission, 2009, pp. 16f.).

For the period of 2005-2009 investment in new traffic infrastructure by ÖBB and Asfinag AG amounted to € 9.8 billion<sup>9</sup>. Based on elasticities taken from the literature, we estimated the medium to long run effects on Austrian GDP. The results indicate a level shift of GDP by about 2.2 percent.

#### *ICT Infrastructure*

##### **Expected Effects**

As was described in IHS 2006, orthodox growth theory suggests that the surge in productivity growth in the USA since the mid-1990s was related to high overall investment in, and effective use of, ICT, especially in the services sector, a development that was not prevalent in Europe at that time. Technological advancement has been proven to be crucial for the rate of productivity and growth in the economy. The impacts of ICT on productivity are achieved in three ways – by raising capital stock (capital deepening), by raising total-factor productivity (TFP) through growth in high tech ICT producing countries, and by raising TFP through efficiency effects, network effects and spillovers. The economic effects of promoting e-government have already been considered in the literature. One positive effect of e-government promotion is that public sector organizations will be induced to pursue interactive communication with their "customers". In the absence of ICT this is not possible and public sector organisations are not confronted by competitive pressure from the market, as are private firms. The introduction and enforcement of e-government will create a "quasi-market for public services" in which pressures for public sector organisation will be forced to improve their productivity. These forces will help to improve public sector productivity and thus increase the overall productivity of the economy. The magnitude of overall effects has been shown to depend on the diffusion of ICT.

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<sup>9</sup> The authors compiled these figures on the basis of company reports of Asfinag AG, ÖBB Holding for various years and ÖBB Infrastruktur AG (2009).

Table 8: Real value added per hour worked (average annual compound growth rates), 1980-2005

	EU	US	Jap
TOTAL	1.9	1.7	3.2
ICT PRODUCTION	5.5	7.5	10.0
GOODS	2.7	1.8	3.0
Manufacturing	2.7	2.4	3.3
Other goods	2.7	0.9	2.3
SERVICES	1.2	1.4	2.6
Market services	1.3	2.1	2.9
Distribution	2.2	3.2	3.5
Finance & Business	0.3	0.9	2.7
Personal	-0.4	1.2	0.7
Non-market services	1.0	0.1	1.4

Source: Timmer and Jorgenson (2009).

Table 9: Sectoral contributions to aggregate labour-productivity growth (%-points), 1980-2005

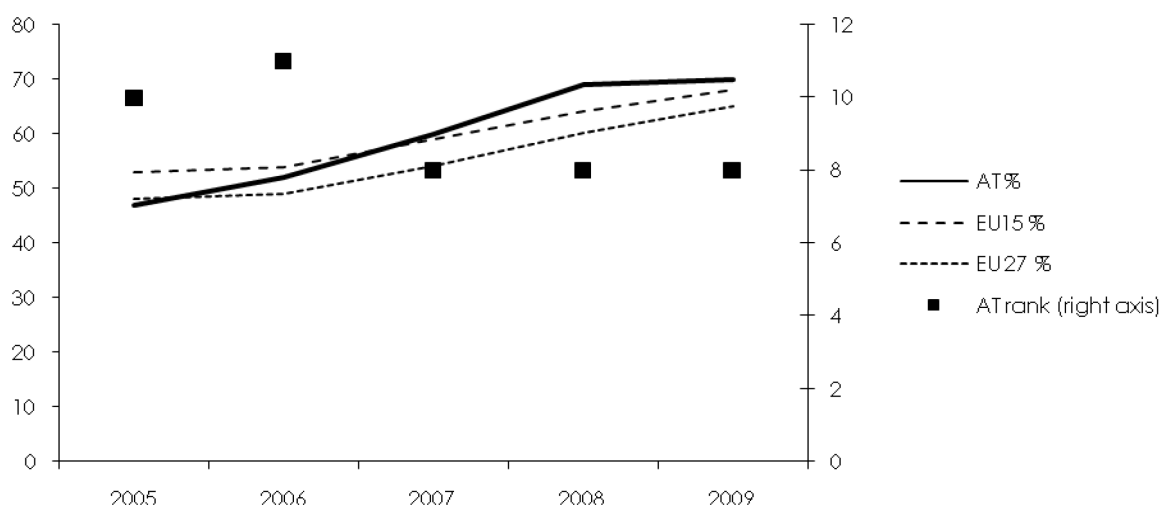
	EU	US	Jap
MARKET ECONOMY	2.1	2.3	3.5
Of which			
ICT Production	0.4	0.6	0.7
Manufacturing	0.7	0.5	0.9
Other goods	0.5	0.2	0.4
Distribution	0.5	0.7	0.9
Finance Business	0.1	0.2	0.4
Personal	0.0	0.1	0.1
Reallocation effect	0.1	0.0	0.2

Source: Timmer and Jorgenson (2009).

In a 2009 paper *Timmer and Jorgenson* update the results for 1995-2001 presented in IHS 2006 concerning the composition of growth in labour productivity. For ICT production they find annual average growth rates of 5.5% in the EU to more than 7% in the US and 10% in Japan.

Timmer and Jorgenson also analyse the contributions of industries to total economy productivity growth over the period 1980-2005 and calculate the contribution of a sector to aggregate labour-productivity growth as the sectoral labour productivity growth rate. They find that productivity growth rates are by far the highest in ICT production, but that the contribution of this sector to aggregate growth is limited by its small share in overall value added. Manufacturing and other goods-producing industries have remained dominant in the EU, while the contribution of market services has been higher in Japan and the U.S. (*Timmer and Jorgenson, 2009*).

Figure 12: Percentage of population with internet access



Source: Eurostat. Information Society Statistics.

### Current Situation and Effects of NRP measures

In 2005 47% of all Austrians had internet access at home (10<sup>th</sup> in rank in the EU25), 2009 already 70% of Austrians had internet access at home (8<sup>th</sup> in rank in the EU27). In 2007 Austria for the first time exceeded the EU 15 average.

In 2005 12% of the population had broadband internet access (EU25-rank 9). By 2009 that value had nearly doubled to 22%, still keeping Austria below the EU15 and EU27 average at rank 13 of the EU27.

Considering mobile broadband penetration, Austria ranks 1st among the EU27 with a penetration ratio of 11.4%, with the EU average at 2.8%.

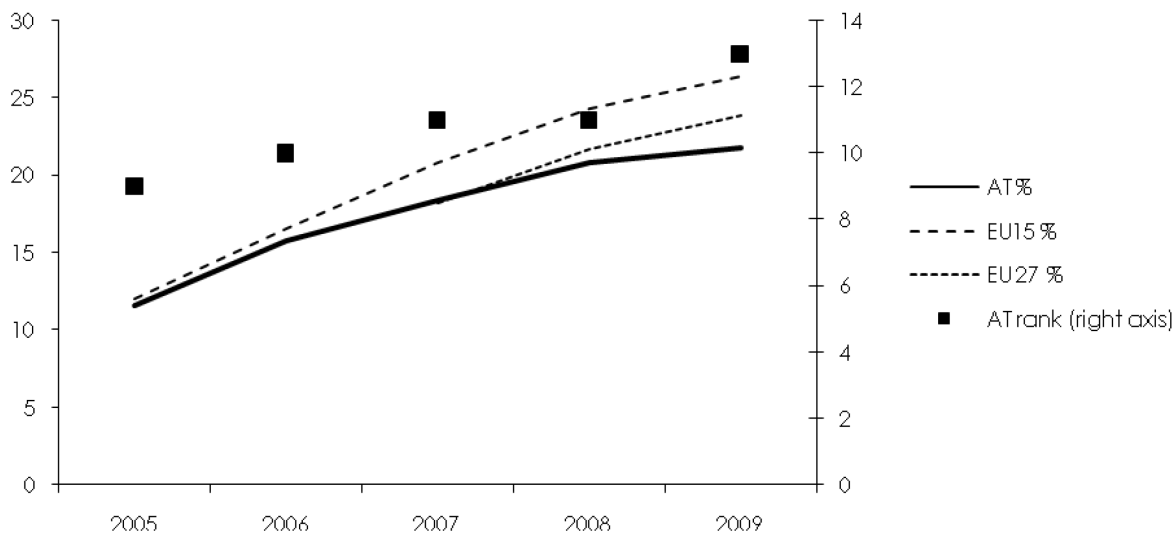
The percentage of individuals 16-74 who used internet for the following activities: downloading official forms, obtaining information from public authorities websites, for sending filled forms was 29% (rank 6 of the EU25) in 2005 and increased to 39% (rank 7 of the EU27) in



2009, with Austria always clearly exceeding the EU average (also compare Table 11 in the appendix).

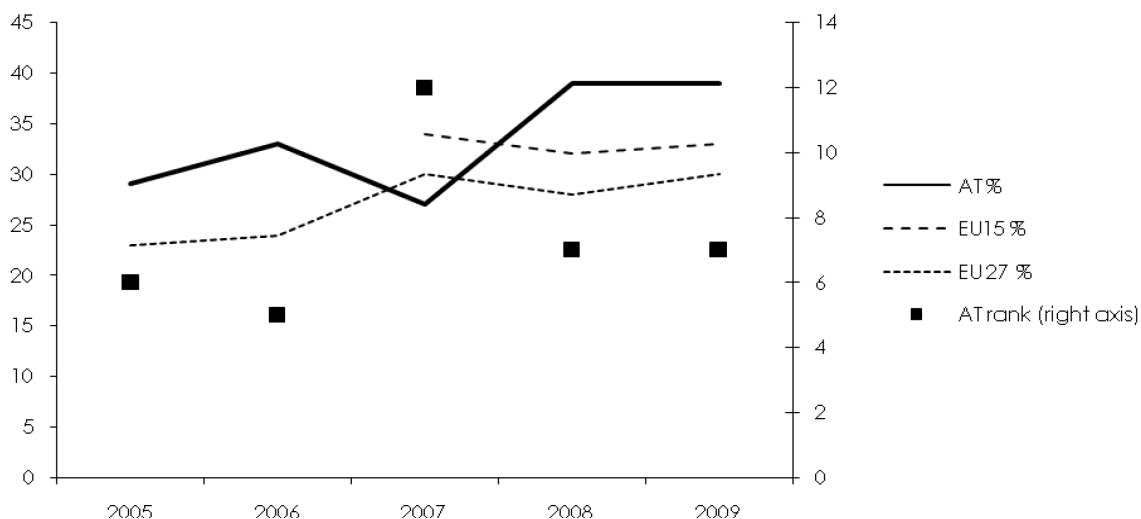
The percentage of enterprises using Internet for interaction with public authorities for full electronic case handling, for obtaining information, for obtaining forms, for returning filled in forms was 75% (rank 8<sup>th</sup> of the EU25) in 2005 and 79% (rank 13 of the EU27) in 2009, with Austria also clearly above the EU average.

Figure 13: Broadband penetration



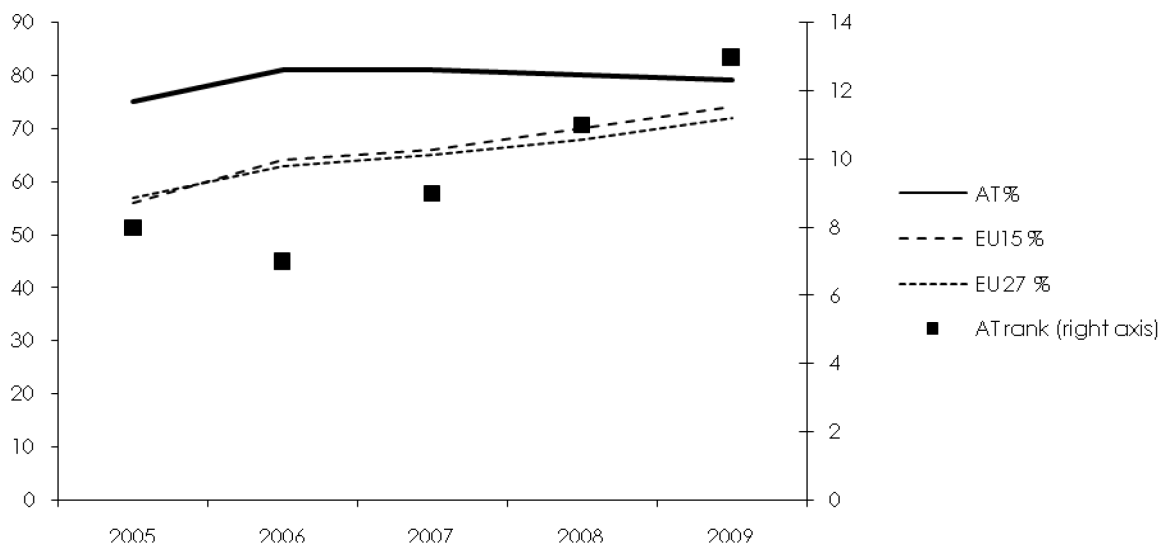
Source: Eurostat. Information Society Statistics.

Figure 14: E-Government: Private



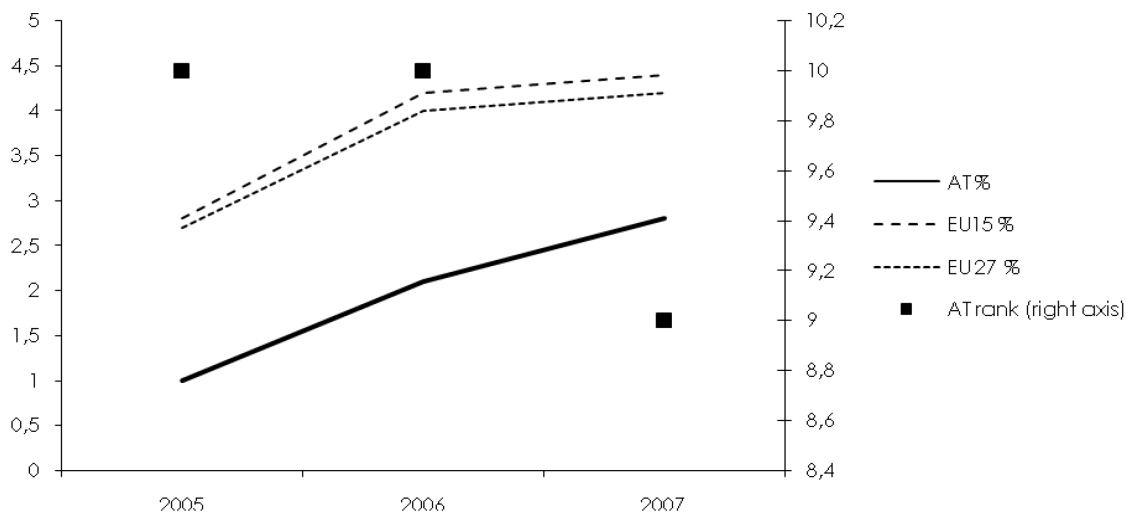
Source: Eurostat. Information Society Statistics.

Figure 15: E-Government: Commercial



Source: Eurostat. Information Society Statistics

Figure 16: E-commerce



Source: Eurostat. Information Society Statistics

E-commerce in 2005 was at about 1% of all transactions, which implies EU25-rank 10, it nearly tripled to 2.8% (rank 9 of the EU27) in 2007 (latest available data).

The following table shows the main measures of the Austrian Government concerning the Integrated Guideline 9 and gives a brief overview on the status and likely economic effects of these measures.

Table 10: Summary of ICT Measures listed in NRP and current status

Measure	Status	OECD priority <sup>1</sup>	Expected Effects
Implementation of '2010-Strategy'	ends 2010 <sup>2</sup>		Centrepiece of Lisbon Strategy for Growth and Employment
Broadband Initiative			Positive effects for growth and employment
Broadband Initiative 'Austrian electronic network'	expanded in 2009 <sup>3</sup>	high	Positive effects, Increased international competitiveness, leaner administration
ICT-Board	installed in 2010 <sup>3</sup>		
eCooperation Board	set up <sup>4</sup>		
Platform 'Digital Austria'	running <sup>5</sup>		
Taskforce-ICT	installed in 2007, running	increasing	Positive effects, Increased international competitiveness, leaner administration
eGovernment Strategy 2005+	new one-stop portal for businesses set up in 2010 <sup>3</sup>		
Ambient Assisted Living	projects running in 2008, 09 and 10 <sup>6</sup>	high and increasing	Indirect positive effects, R&D in ICT area with market potential (in view of demographics)

Sources:

<sup>1</sup>OECD: Science & Information Technology 2006, vol. 2006, no. 16, pp. 1 – 315;

<sup>2</sup><http://www.bka.gv.at/site/5576/default.aspx>

<sup>3</sup>Wirtschaftsbericht 2010, <http://www.bmwfj.gv.at>

<sup>4</sup><http://www.bka.gv.at/site/6508/default.aspx>;

<sup>5</sup><http://www.digitales.oesterreich.gv.at/>

<sup>6</sup><http://www.bmvit.gv.at/innovation/internationales/aal/index.html>;

The expanded broadband initiative<sup>10</sup> in combination with the successful implementation of e-government measures can still be expected to raise Austrian TFP in the long run. Eventually an increase in economic growth can be expected. A recent paper on the effects of Broadband Infrastructure on economic growth suggests that an increase in the broadband penetration rate by 1 percentage point increases per-capita growth of the economy by 0.09 – 0.145 percentage points. (compare *Czernich et al.*, 2009) The Austrian broadband penetration rate increased by 12.4 percentage points between January 2005 (10.2%) and January 2010 (22.6%) according to Eurostat. The estimates by *Czernich et al.* (2009) would suggest that the Austrian per-capita growth rate increased between 1.1 and 1.8 percentage

<sup>10</sup> An evaluation of the broadband initiative showed, that the program successfully induced an increase in broadband infrastructure which was 13 times higher than the funds provided by the government and total broadband coverage increased substantially. (compare *Jirik and Taudes*, 2009).

points in the same period, which is a very high effect. In addition to that the rise in the broadband penetration rate cannot be solely attributed to the broadband initiative, since the broadband penetration would have increased anyway. To the best knowledge of the authors, no studies have been conducted so far isolating the effects of the broadband initiative from the general trend. Hence it is not clear what fraction of the increase is only due to the broadband initiative and which is not. We would furthermore expect positive effects on employment demand. This effect is however ambiguous, as increasing productivity is not always associated with an increase in labour demand, depending on whether the productivity increase is driven by rationalization or not. An IHS study for the European services sector draws attention to the importance of labour market regulations as another factor determining labour demand and subsequent employment effects. (Felderer *et al.*, 2005) E-government initiatives aimed at raising public service productivity are expected to lower costs for individuals and companies. By the cost reduction companies operating in Austria are benefiting from a competitive advantage, especially with Austria still being above the EU average in the use of e-government. Thus it can also still be expected that the long term GDP level will increase as a result of those measures.

#### *Summary*

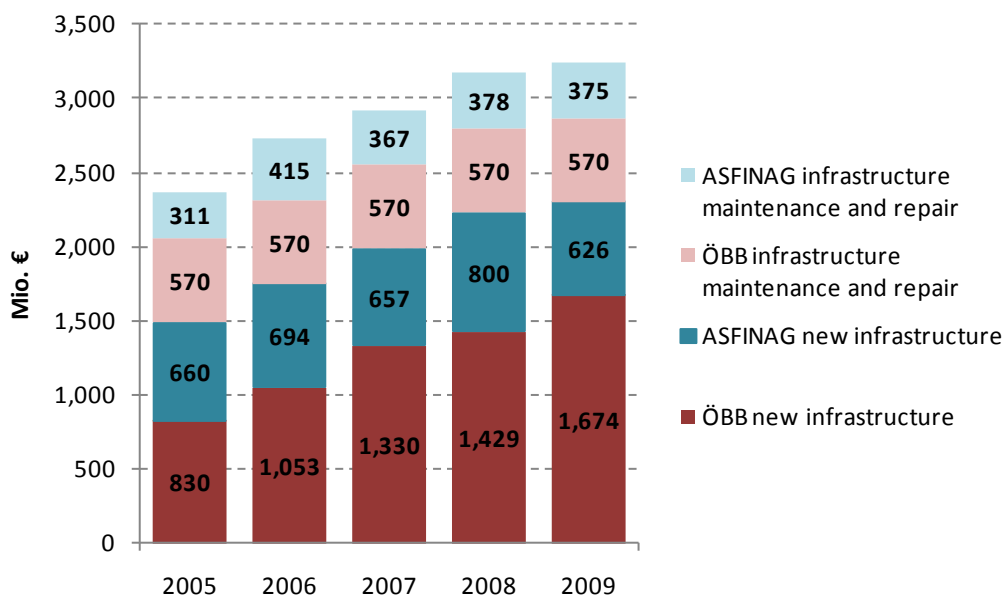
Infrastructure, in general, is considered to be of great importance as an engine for growth according to endogenous growth theory. Improving the traffic infrastructure of an economy is among the areas in which public policy can achieve a higher level of productivity and output. The reason for this is that an improved transport infrastructure will reduce transport costs and will divert economic resources from transportation to more productive uses. Thereby overall productivity increases which has a positive effect on economic growth. Through reducing costs and strengthening productivity, transport infrastructure will have a positive effect on the whole country as an attractive location for enterprises. These positive effects are well documented in the literature. The traffic infrastructure investment projects focused on improving the links to northern and eastern neighbour countries as well as reducing congestion in the greater Vienna region, which appear to be important improvements. We estimate the long run growth effects of the measures undertaken in the period 2005 – 2010 on Austrian real GDP to be around 2.2% compared with 2005.

High investment in ICT has contributed to the surge in productivity growth in the United States since the 1990s. Investment into and effective use of ICT is an integral part of the Lisbon Agenda. The impacts of ICT on productivity are achieved in three ways – by raising capital stock (capital deepening), by raising total-factor productivity through growth in high tech ICT sectors and spill over effects to other sectors. Measures in the Austrian NRP are in line with the Lisbon Agenda and IHS regards them as adequate. It is, however, difficult to quantify the exact magnitude of the initiatives in this field, as a number of studies have shown that ICT interacts with various other economic variables. Further on it was shown that the effect of ICT production on aggregate labour productivity growth is somewhat restricted by its small share in total value added. The broadband initiative in combination with the successful

implementation of planned e-government measures is still expected to raise Austrian total factor productivity (TFP) in the long run, especially since the exceptional e-government initiative has made Austria's administration to be one of the most responsive in the EU. E-government initiatives aimed at raising public service productivity are expected to lower costs for individuals and companies therefore creating a competitive advantage. Eventually, an increase in economic growth can thus be expected, which could also positively affect employment demand. This last effect, however, is ambiguous, as increasing productivity is not always associated with an increase in labour demand, depending on whether the productivity increase is driven by rationalization or not.

Appendix

Figure 17: Annual Breakdown of Traffic infrastructure investment, current prices



Source: ÖBB (2009), Asfinag AG and ÖBB Holding, company reports, various years.

Table 11: ICT-Indicators

Indicator	2005			2006			2007			2008				
	%	rank	EU15	rank	EU15	EU25	%	rank	EU15	EU25	%	rank	EU15	EU25
<b>General</b>														
Percentage of population with internet access	47	10	below	11	below	above	60	8	above	above	69	8	above	above
Broadband penetration	11,6	9	below	10	below	above	18,4	11	below	below	20,8	11	below	below
<b>E-Government</b>														
<b>Private</b>														
Percentage of individuals 16-74 who used internet for the following activities:														
downloading official forms, obtaining information from public authorities	29	6	above	5	above	above	27	12	below	below	39	7	above	above
websites, for sending filled forms														
<b>Commercial</b>														
Percentage of enterprises using Internet for interaction with public authorities for full electronic case handling, for obtaining information, for obtaining forms, for returning filled in forms	75	8	above	7	above	above	81	9	above	above	80	11	above	above
<b>E-Commerce</b>														
Percentage of enterprises' total turnover from e-commerce over the last calendar year	1	10	below	10	below	below	2,8	9	below	below				

Source: Eurostat, Information Society Statistics.



### 3.2.3 Climate change and environmental policies

#### **Jürgen Janger, Daniela Kletzan-Slamanig (WIFO)**

##### *Objectives*

The national reform programme does not contain any quantitative objectives for environmental policy. In the second implementation report goals are described verbally as follows:

"Environmental technologies and efficient resource management: Energy and climate policies comprise a great number of goals: security of supply, energy efficiency, energy saving, economy and competitiveness as well as ecological sustainability. The important thing in this respect is to offer households and companies affordable and efficient green energy. In continuation of the measures and policies already having been put in place, in the future national policies will also focus on fostering energy efficiency, decreasing energy demand as well as increasing the generation of energy from renewable sources in an economically reasonable way.

Austria's position is to be strengthened further in those areas of energy and environmental technologies, where Austria has already assumed a leading role in Europe and worldwide."

This study takes into account the benchmarks of the climate strategy 2007 (BMLFUW, 2007), i.e. Austria's obligations within the framework of the Kyoto protocol and the EU's burden sharing agreement. Austria committed itself to reduce greenhouse gas emissions in the period 2008 to 2012 by 13% as compared to the level of emissions in 1990. The Austrian climate strategy defined a number of objectives for policies aimed at reaching the Kyoto target, among them

- Increasing the annual share of thermal refurbishment of buildings to 3% (2008-2012)
- Reducing the energy intensity of final consumption by 5% by 2010
- Increasing the share of renewable energy sources in energy consumption to 25% by 2010
- In the framework of the EU emissions trading scheme, Austria's emission reduction targets amount to 7.3 million tons greenhouse gases per year as compared to expected greenhouse gas emissions from 2008 to 2012 or to 3 million tons as compared to the level of emissions in the years 2005 and 2006
- Increasing the share of bio fuels to 10% by 2010

The policies which address climate and environmental concerns and which are considered here can be broadly grouped in two areas, first the reduction of greenhouse gases and second promoting the production of environmental technologies. We will first deal with measures to confront greenhouse gases and then assess policies to foster the development of environmental technologies.

##### *Reduction of greenhouse gases*

Greenhouse gases can be reduced using different strategies. These include:

- Fuel switch: Replacing fossil energy fuels with renewable energy sources such as hydropower, wind power, solar energy and biomass.
- Reducing activities which produce greenhouse gases (reducing energy demand e.g. through behavioural changes - public transport instead of individual motorised traffic); this may be supported by changing price signals (taxes, allowances), other regulatory measures or increased public awareness.
- Increasing the efficiency of application and transformation technologies<sup>11</sup> without changing the activities themselves ( e.g. through diffusion of environmental technologies, targeted R&D support)

Austria has already implemented measures between 2005 and 2010 which take account of the above three strategies. It has:

- Participated in the EU emissions trading scheme
- Changed the taxation framework (increase of petrol tax, standard fuel consumption tax)
- Amended the Green Electricity Act 2006/8
- Continued to operate a special funding scheme addressing environmental projects ("Umweltförderung im Inland")
- Expanded public transport (rail infrastructure)<sup>12</sup>
- Increased R&D support for clean energy (partly funded by the climate and energy fund "KLIEN" set up specifically for this purpose ) and "smart" traffic regulation systems

The effect of the measures described above on the development of greenhouse gas emissions is difficult to determine and goes beyond the scope of this study. However, below we show several descriptive indicators regarding trends in emissions as well as emission and energy intensities.

Figure 18 depicts the development of total greenhouse gas emissions since 1990, illustrated both as actual emissions and as a trend line which indicates the required reduction path in order to comply with Austria's Kyoto target. While Austria's emissions in 2008 are above the Kyoto target level, there is a trend break in 2005, showing downward sloping greenhouse gas emissions. Due to the economic crisis in 2009 and subdued economic activity in 2010, greenhouse gas emissions are likely to continue their downward trend, although this is not related to structural changes in terms of a sustainable energy system<sup>13</sup>. However, despite this trend, in order to reach the Kyoto target in 2012 and in view of the climate and energy

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<sup>11</sup> Application technologies refer to technologies like household appliances, production technologies or transport technologies while transformation technologies are used to generate electricity and/or heat.

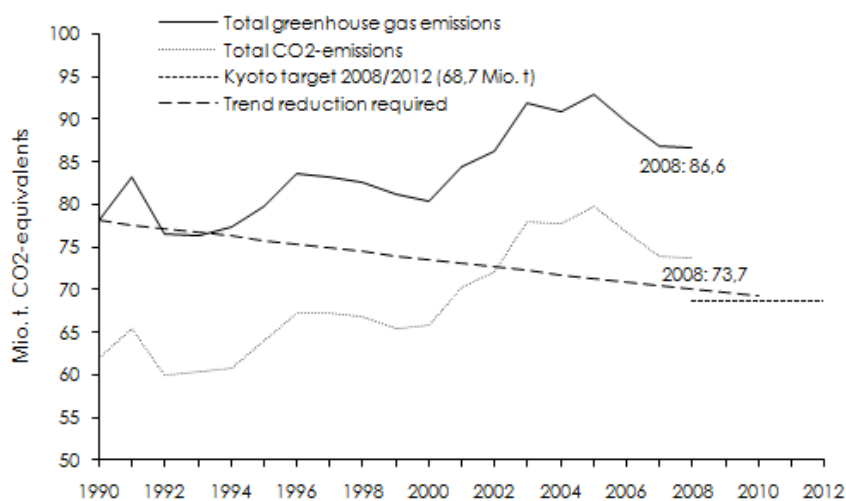
<sup>12</sup> At the same time, automotive infrastructure has also expanded. The economic effects of infrastructure investment will be analysed in chapter 4.2.2.

<sup>13</sup> Emission reductions are merely caused by the decline in economic activity, i.e. production or related transport volumes. No structural change related to technological improvements or shifts towards renewable energy use has taken place which would result in increased energy or emission efficiency (e.g. output per TJ energy use or output per t CO<sub>2</sub>).



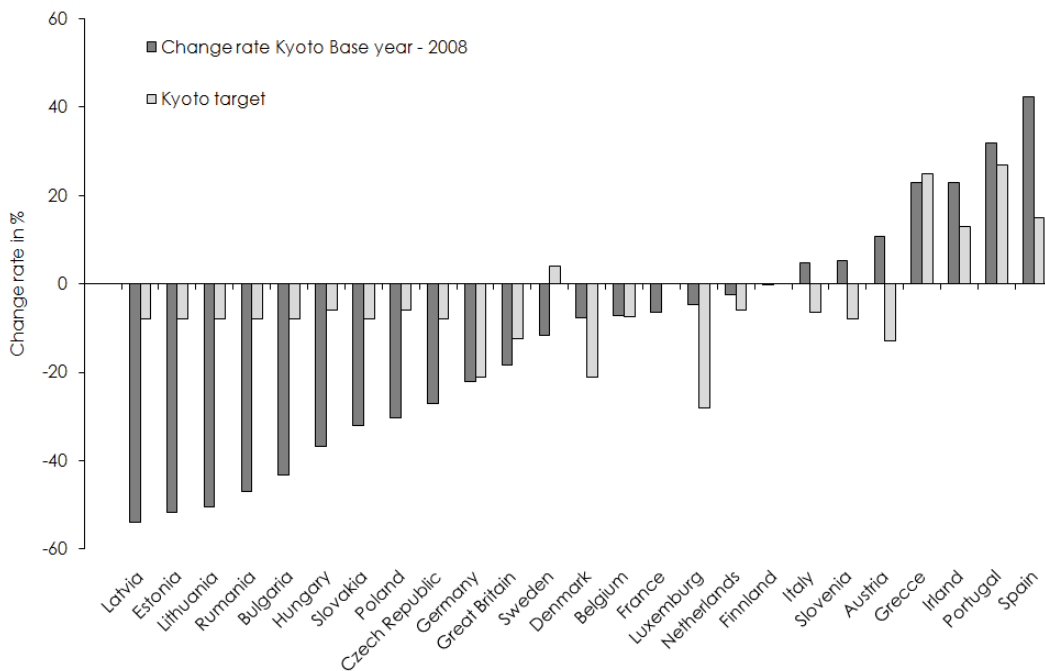
objectives defined by the EU for 2020 Austria will certainly need to implement some additional measures.

Figure 18: Greenhouse gas emissions in Austria, actual development in comparison with the Kyoto target, 1990 to 2008



Source: UBA, WIFO calculations.

Figure 19: Deviation of actual greenhouse gas emissions from Kyoto target, 2008

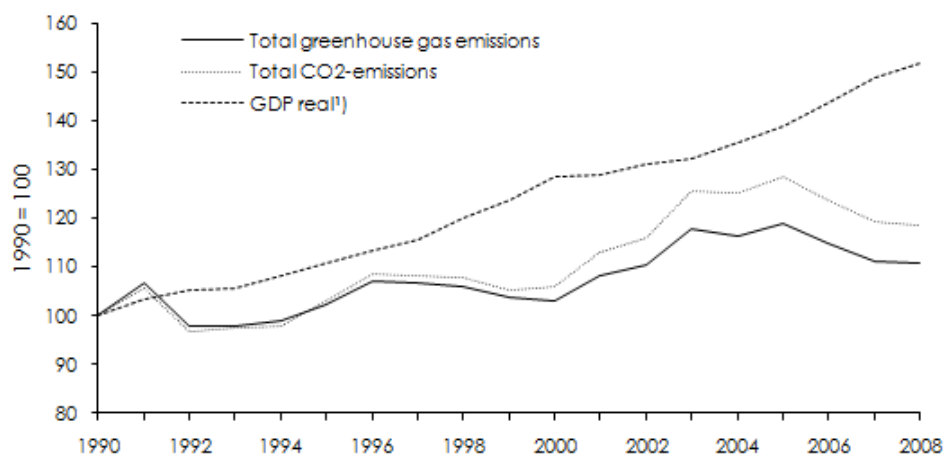


Source: Eionet, WIFO calculations.

Figure 19 shows the EU's overall Kyoto performance. While Austria's emissions reduction target was one of the most ambitious of the 15 "old" member states, unlike the EU-15 total and half of the EU-15 member states Austria did not succeed in reducing greenhouse gas emissions.

Below we first show trends in emissions and energy consumption compared with the growth of real GDP. For both greenhouse gas emissions and gross domestic energy consumption a relative decoupling from economic growth can be observed. I.e. energy use and emissions on average grow at a lower rate than real GDP. In addition, a trend break in terms of absolute reductions between 2005 and 2008 has taken place. In order to achieve reductions in energy consumptions and emissions via the diffusion of new, environmentally friendly technologies, behavioural changes etc. a bundle of instruments and measures has to be applied. The Austrian climate policy efforts comprise of such multi-faceted approaches.

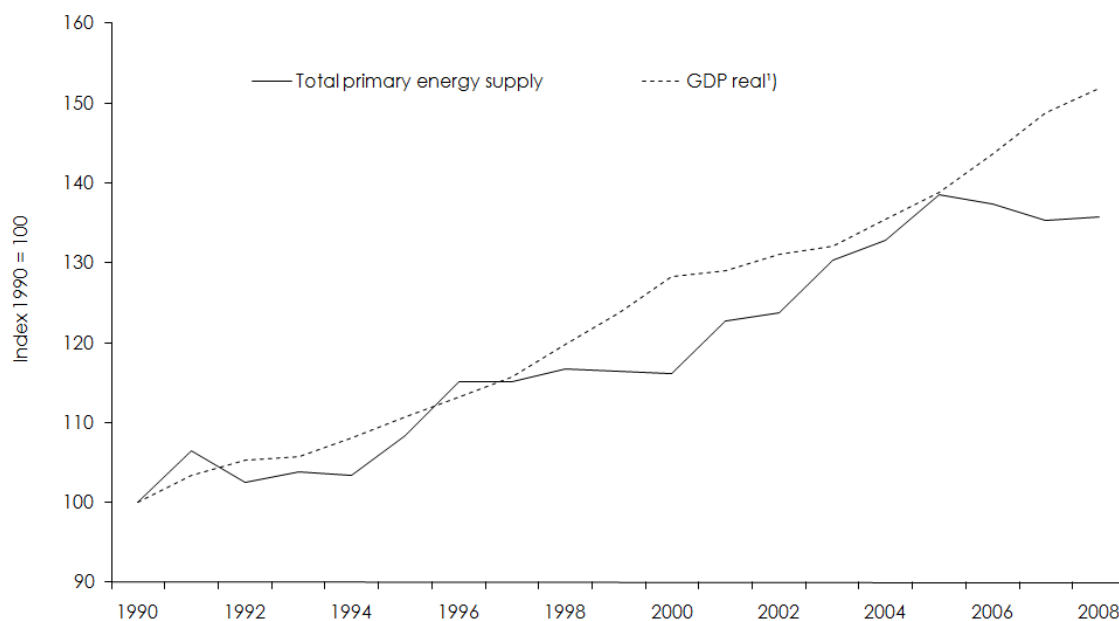
Figure 20: Greenhouse gas and CO<sub>2</sub>-emissions in comparison with GDP growth, 1990-2008



Source: UBA, Statistik Austria, WIFO-Data Base.

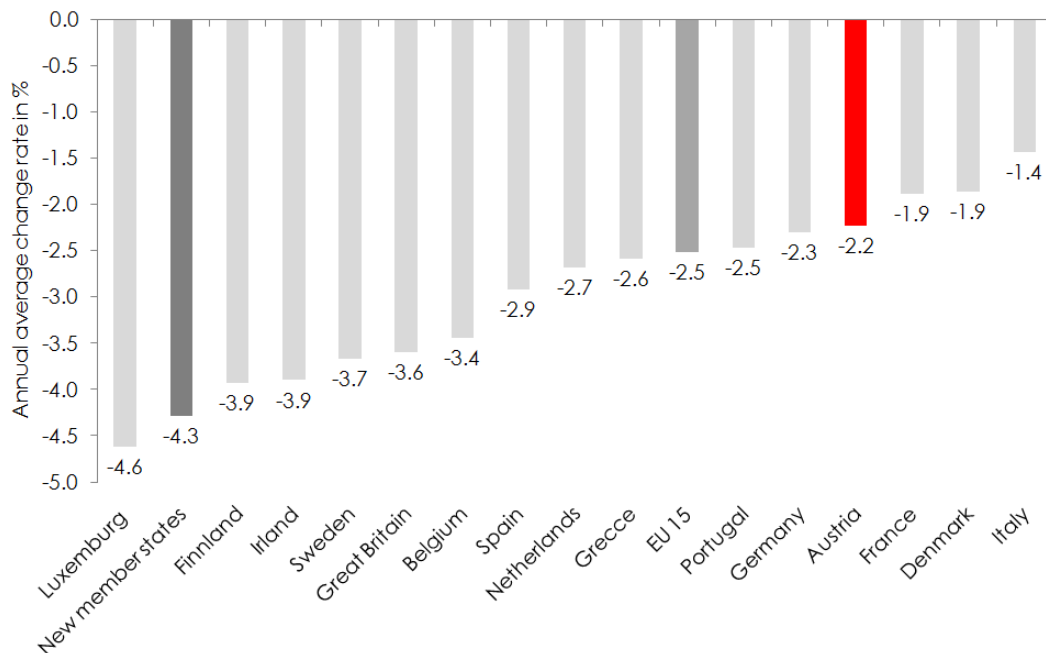
Taking a closer look at the changes in energy intensity of the Austrian economy in international comparison, Figure 22 shows that improvements in recent years have not been particularly significant, even though the period 2004 to 2008 marks a clear progress in comparison with the period 2000 to 2004 (not shown), when Austria was at the bottom of the ranking of EU economies according to their change in energy intensity. However, it has to be taken into account that in absolute terms of energy intensity Austria still holds a good position compared to other European countries (rank 4 of the EU 15 countries).

Figure 21: Gross domestic energy consumption in comparison with GDP growth, 1990-2008



Source: UBA, Statistics Austria, WIFO database.

Figure 22: Change in energy intensity in international comparison, 2004 to 2008  
 TJ Gross domestic energy consumption per million € of real GDP, 2004-2008



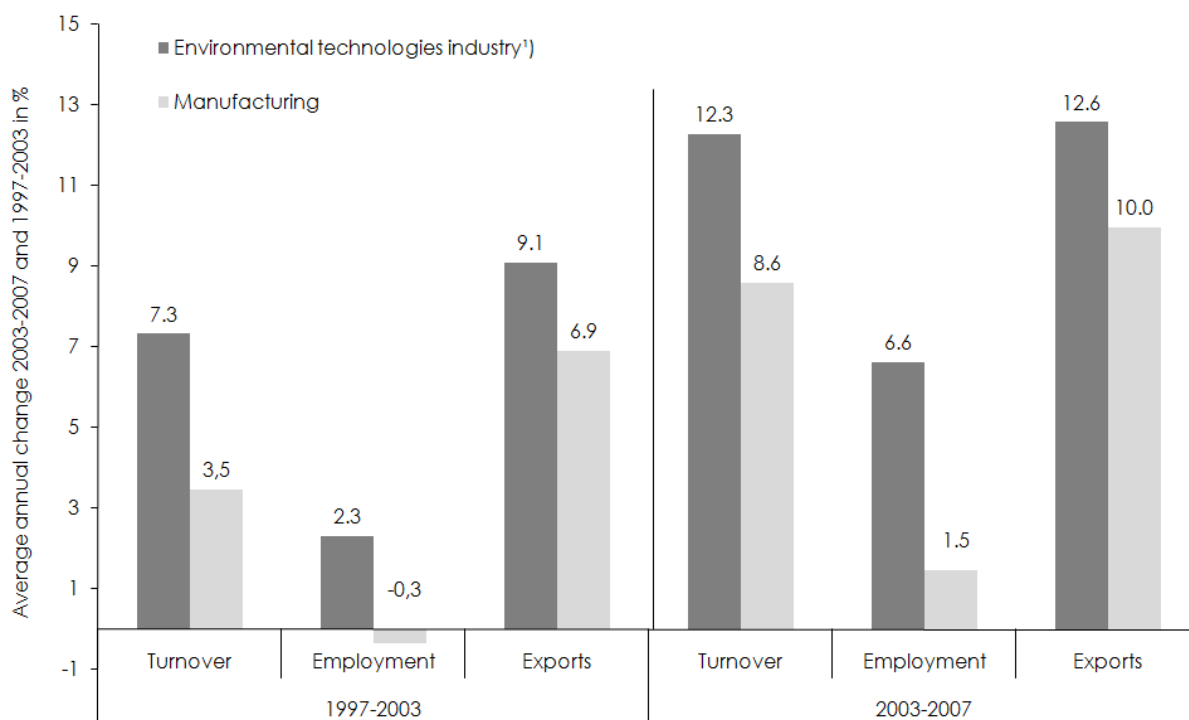
Source: Eurostat, WIFO calculations.

Overall, while the policy goals have not been achieved yet, there is a trend since 2005 towards some improvement, indicating that there have been positive effects from renewed climate policy efforts within the Lisbon Strategy and from the EU's assessment that greenhouse gas emissions reduction strategies are a point to watch in Austria.

### Environmental technologies

Supporting the development, production and implementation of environmental technologies is the second focus of the national reform program. The study by *Kletzan-Slamanig and Köppl (2009)* uses a survey among firms to assess the performance of the environmental technologies sector in Austria in 2007 and compares the figures in 2007 to previous versions of the survey from the years 1993, 1997 and 2003. This is necessary because environmental technologies cannot be identified from conventional economic statistics based on structural classifications such as the NACE-system since environmental technologies are a cross cutting issue encompassing a broad range of technological competencies in various sectors. The advantage of a direct survey among firms is thus a detailed picture of the environmental technologies industry in Austria. Given the limitation for assessments of this industry from conventional statistics a similar data base for international comparisons is not available.

Figure 23: Economic Indicators – Annual Growth Rates 1997-2003 and 2003-2007



Source: WIFO census for 1997, 2003, 2007, WIFO calculation, Statistik Austria (Konjunkturstatistik, Österreichische Außenhandelsdatenbank). – <sup>1)</sup> Data estimated.

The study finds the environmental industry has shown strong growth since 1993. The number of firms has increased from 248 to 375 since 1993. Figure 23 compares growth rates of Austrian manufacturing in general to that of the environmental technologies industry. Turnover, employment and exports have grown at a much faster pace than in manufacturing as a whole. In particular employment between 2003 and 2007 has been growing at a rate four times higher than manufacturing as a whole.

The survey also shows that Austria's environmental technology industry, in particular the field of energy technologies, boasts a higher research and innovation intensity than the manufacturing average. The research expenditure of environmental technology suppliers increased considerably in the period from 2005 to 2007 (on average by 17% annually) and in the majority of cases innovative activities grew as compared with previous years. For 90% of the innovating producers of environmental technologies their competitiveness had improved due to these innovations.

The survey further asks firms about the determinants of the demand they face. Table 12 below shows that in 2007 EU legislation was the most important determinant of market demand, while in 1997 domestic legislation was the main driver. Furthermore, public funding for environmental investment is very important, as well as societal environmental awareness. All these elements depend on public policies and on the public framework conditions for market activity. Hence, policy can play a major role in fostering the sector of environmental technologies.

Table 12: Determinants of market demand, rank assigned by firms, 1997-2007

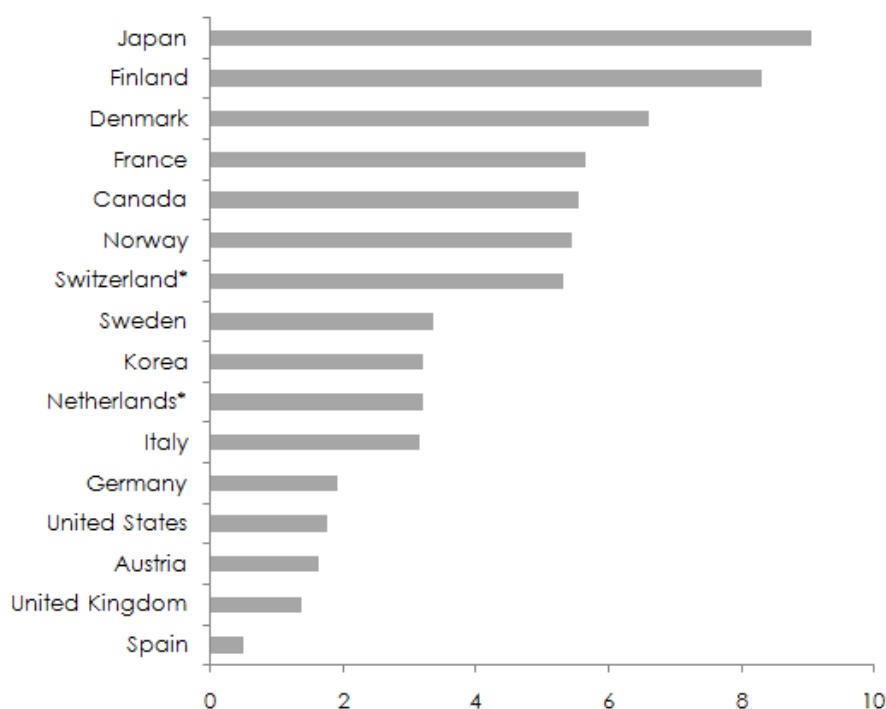
	Rank 2007	Rank 2003	Rank 1997
EU Legislation	1	2	
Public funding for environmental investment	2	1	4
Environmental awareness of society	3	4	3
Domestic Legislation	4	3	1
Public sector investment	5	6	6
Non-EU foreign legislation	6	5	-
EU enlargement	7	8	-
Competitive strategy	8	7	8
Environmental management systems	9	9	-
Foreign legislation	-	-	2
Cost reduction	-	-	5

Source: Kletzan-Slamanig and Köppl (2009).

Concerning legislation, the Kyoto targets, the EU2020 agreements and domestic legislation have provided strong incentives for customers to demand environmental technologies. As regards R&D support for firms producing environment technologies, according to the

available data they use public research subsidies less often than other companies. This comes somewhat as a surprise as the government has launched many environmental technology initiatives such as "Building of Tomorrow", "Factory of Tomorrow" and "Energy Systems of Tomorrow". However, the data is confirmed by an analysis of the share of public R&D expenditure on clean energy technologies from total public R&D expenditure, where Austria's share is rather low (Figure 24). A stable and yet ambitious framework in energy and environmental policy is important for the development of environmental technologies and, consequently, to enable their successful market introduction and their diffusion as well as to exploit their export potential.

Figure 24: Share of government R&D expenditure in total government R&D expenditure, 2007



Source: IEA, OECD, WIFO calculations.

In conclusion, Austria's environmental technology sector is growing strongly, contributing to mitigating climate change in particular in the EU-27 which is where the majority of exports are directed. The strong position of the Austrian environmental technology industry may be linked to Austria's early introduction of strict environmental regulation in the 1980s (*Kletzan-Slamanig and Köppl, 2009*). Nowadays, the role of domestic legislation has been overtaken by EU legislation, although Austria still controls most of the funding instruments for the environmental sector. Given the scale of the challenge ahead of Austria and the world, there is definitely room to increase for example targeted support for R&D activities of firms, universities and research institutes related to improving environmental technologies.

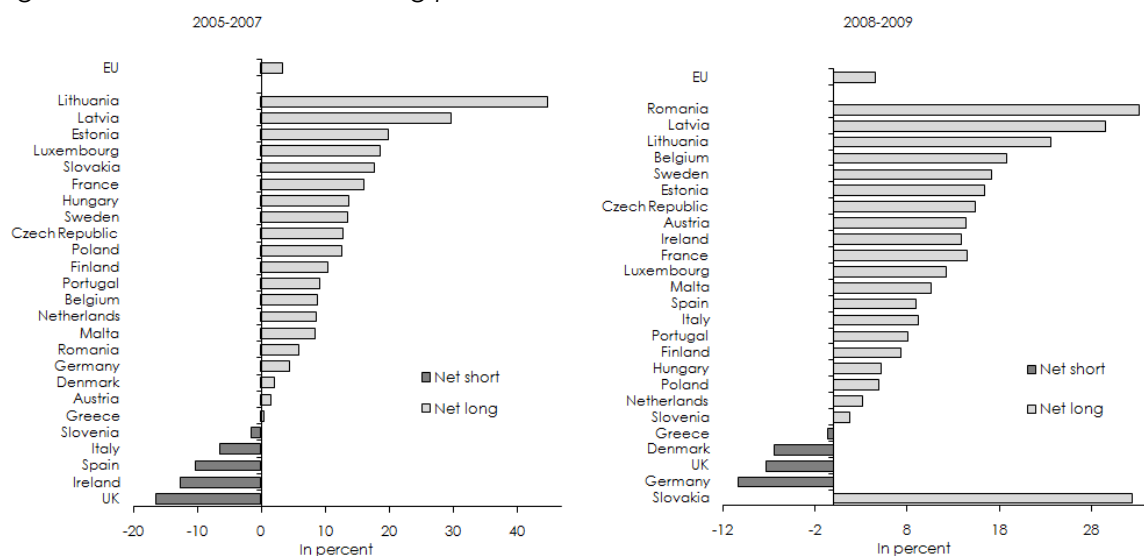
*Detailed evaluations and/or studies*

Now, we will summarise the results of several studies on or evaluations of more detailed policies in the area of climate change and environmental technologies.

*Evaluation of EU Emission Trading Scheme (ETS)*

Kettner – Köppl – Schleicher (2010) provide a first assessment of the EU Emissions Trading Scheme (ETS) for the years 2005 to 2009. The EU Emission Trading Scheme (EU ETS) covers about 40 per cent of total EU greenhouse gas emissions (60 per cent of EU CO<sub>2</sub> emissions) and is the biggest implementation worldwide of a cap-and-trade mechanism to curb emissions. Evidence from the first trading period (2005-2007) and the first year of the Kyoto period 2008 showed, however, that emission allowances were substantially over-allocated. As a result, the "cap" on the overall amount of greenhouse gases was not sufficiently binding. In 2008, a more tightly set cap was applied, leading to several industries being in short supply of emission allowances and hence to rising prices of the allowances, incentivizing efforts to reduce greenhouse gas emissions. The economic crisis of 2009 led to a sharp drop in production, so that again the cap was not particularly effective. In addition, high price volatility was observed, which is inimical to plan long-term environmental investment projects as the rate of return cannot be safely calculated.

Figure 25 a and b: Short and long positions of countries in the EU ETS scheme, 2005-2009



Source: Kettner - Köppl - Schleicher (2010).

Figure 25a and b show the position of countries with respect to the balance between allocated and actual emissions: "net long" means that overall, the country shows a surplus of allocated emissions and hence that either too many emission rights were allocated or that the country successfully reduced greenhouse gas emissions; "net short" means that overall, the country shows a deficit of allocated emissions and hence that either not enough emissions rights were allocated or that the country did not do enough to cut emissions. In

both the periods 2005 to 2007 and 2008 to 2009, Austria shows a "net long" position. The Emission Trading Scheme also constitutes one central element of the EU's strategy to reach the 2020 emission reduction target.

*Evaluation of public funding scheme for environmental projects*

The public funding scheme for environmental projects in the business sector ("Umweltförderung im Inland") is a public funding scheme to support projects of firms aimed at improving their ecological performance. Over the last decade it increasingly focused on projects to reduce greenhouse gases and energy consumption. In the year 2009, its budget was increased to include support for the refurbishment of buildings and improve their thermal quality as part of the stimulus package against the impact of the economic crisis. A recent evaluation (Kletzan-Slamnig – Steininger, 2010) calculates the economic effect of the public funding based on a computable general equilibrium (CGE-)model. Under the assumption that the firms supported would not have realized the investments without public funding, the economic effects can be summarized as follows:

- Value added: amounting to 0,214% (600 million €)
- Employment effects: 13.300 jobs (net, aggregate effect across sectors)
- Sectoral effects: 1,5% of production, 4.500 jobs in the construction sector and more than 2% of production, 1.800 jobs in the machinery sector

Table 13 shows the economic effects in detail.

*Table 13: Simulated economic impact of the funding scheme for environmental projects , 2009*

*Macroeconomic variables – Effects of sectoral demand shifts, multiplier and stimulus package*

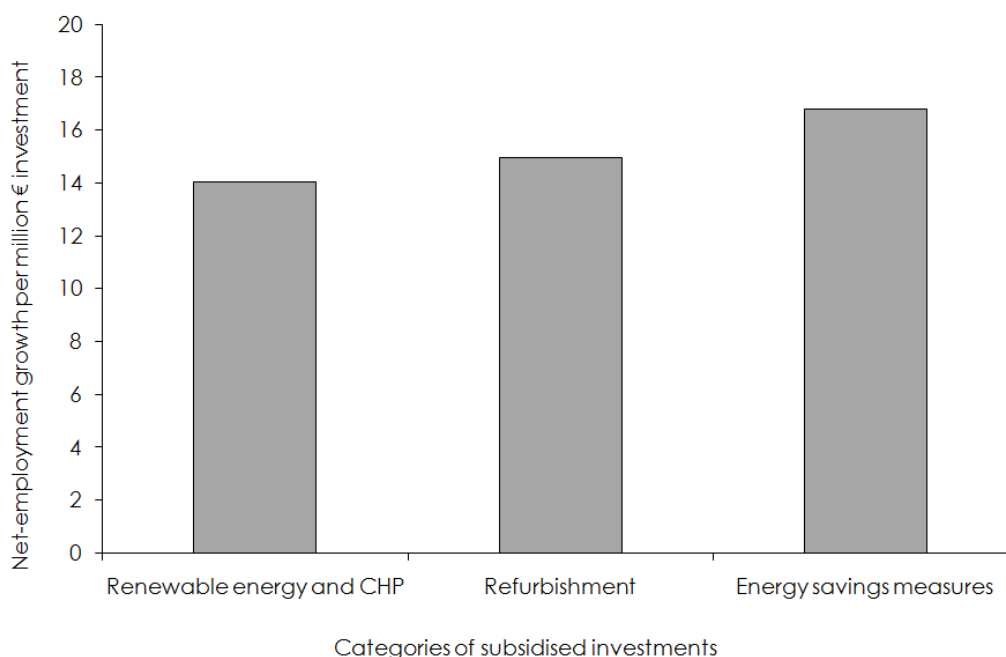
Total investment supported, in million €	992
Shift of subsidies, in million €	155
<i>Impact on macro-economic variables</i>	
GDP (change in %)	0.214
Employment (change in jobs)	13314
Unemployment rate in % (national definition)*	-7.530
Capital price (change in %)	1.377
<i>Impact on public budget in Mio. €</i>	
Revenues direct taxes (change in million €)	328.4
Revenues indirect taxes (change in million €)	-201.7
Labour market expenditure (change in million €)	-183.4
Government consumption (change in million €)	715.7

Source: Kletzan-Slamnig and Steininger (2010). \*unemployed as a share of employees.



The net impact on employment per million Euros of investment is in the range of 14 to 17 jobs across the three different categories of supported investments (renewable energy, refurbishment of buildings, energy saving measures, Figure 26). This effect is rather high as in 2009 there was an economic crisis and hence slack capacity. Furthermore, the public support was financed by additional budget deficit and not redirected away from other alternative uses.

Figure 26: Employment effect of publicly supported investments



Source: Kletzan-Slamanig - Steininger (2010).

In addition to the economic effects of the supported investments, *Kletzan-Slamanig and Steininger (2010)* looked at the long-term reduction of operation costs following the improvement of the thermal quality of buildings of private households<sup>14</sup>. They find that the projects supported by the funding scheme reduced heating energy demand by 46% on average, corresponding to 13.000 kWh. Evaluating this amount of energy at current final consumer prices for gas and oil, households save on average 848 Euro per year in the case of gas and 960 Euro in the case of oil.

However, in the framework of the evaluation, it was not possible to assess any long-term effects in the operating phase, e.g. on employment and output, from the public funding schemes or to assess any effects on the budget due to any reduction in energy costs or a greater incentive to make technological innovations.

<sup>14</sup> The majority of objects refurbished were one- or two-family houses.

Overall though this assessment shows that supporting the adoption of environmentally friendly and greenhouse gas reducing technologies has a significant positive economic impact.

#### *Efficiency of the Austrian car fleet from 1990 to 2007*

In a recent study Meyer and Wessely (2010) assess the greenhouse gas emissions of the Austrian passenger car fleet. The Austrian transport sector is responsible for 26% of Austria's greenhouse gas emissions, half of which is attributable to passenger cars. The transport sector's greenhouse gas emissions have grown by 60% between 1990 and 2008, while manufacturing's emissions have grown by 24%.<sup>15</sup> Hence, passenger transport plays an important role in any climate change strategy. Meyer and Wessely (2010) construct a database of the passenger car stock, merging sales data from Statistics Austria with technical specifications for each car model. Hence they are able to trace the technological efficiency of cars along with characteristics such as weight and engine power etc. Statistics show a clear preference of consumers for heavier and more powerful cars in the period from 1990 to 2007. As an example, the share of Diesel cars weighing between 1.200 and 1.400 kg increased from 10% in 1990 to 42% in 2007. This preference for heavier cars cannot be explained with increased preference for security, as modern security features do not significantly alter the weight of a car. Hence, Austrian consumers display clear preferences for more comfortable and powerful cars.

Nevertheless, average fuel consumption has decreased by 2.6l per 100km, or by 29%. This is likely to be too optimistic as particularly heavy cars are underrepresented in the database. Moreover, average fuel consumption is based on manufacturer's statements which are known to be lower than actual fuel consumption due to driving styles etc. Meyer and Wessely (2010) manage to disentangle progress in technological efficiency without regard to car weight and engine power by measuring the energy needed to transport 1 kg over 100km. They can as a result compare the actual decrease in fuel consumption of 29% with the theoretically possible reduction of fuel consumption had weight and engine power preferences of car buyers not changed since 1990. The technological efficiency improvement is measured at 43%, a full 15% percentage points higher than actual efficiency improvement (dragged down by increasing car weight and engine power).

This shows that consumer behaviour works partly against improvements in technological efficiency. It illustrates a more general point in mitigating climate change made by Meyer – Kratena – Wüger (2009): the necessary reductions in greenhouse gases will not only come about as a result of technological innovations, but will also require behavioural changes of consumers, not least as energy price reductions made possible by technological innovations lead to a "rebound effect" of increased demand for energy (e.g. increase in kilometers

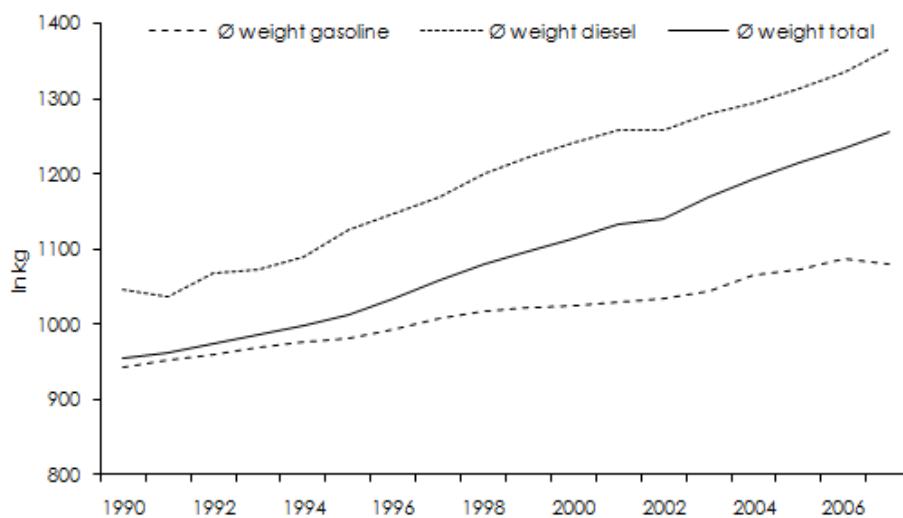
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<sup>15</sup> The increase is partly related to fuel exports in vehicle tanks, as Austrian fuel prices are below the prices of neighbouring countries such as Germany, as well as to structural differences (as a small open economy, Austria features a high export intensity). Overall, in 2008 24.7% of emissions were due to fuel exports as reported by the Federal Environment Agency (Klimaschutzbericht 2010).

driven due to higher efficiency and thus lower costs per kilometer). Of course, public policies can influence consumer behaviour in various ways, such as efficiency standards, pricing, subsidies etc.

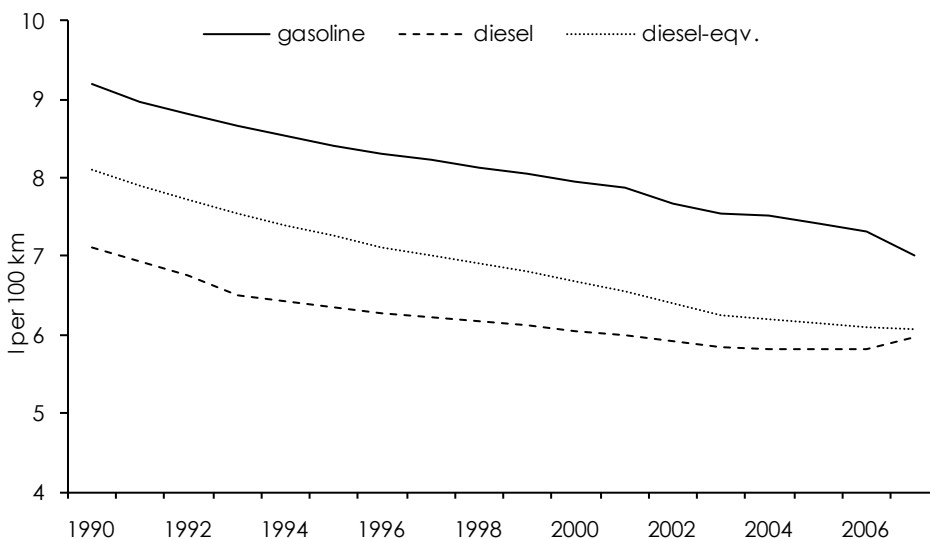
Figure 27 to Figure 29 show the increase in weight of the Austrian passenger car fleet, the decrease in actual fuel consumption and the increase of pure technological efficiency.

Figure 27: Average weight of car fleet



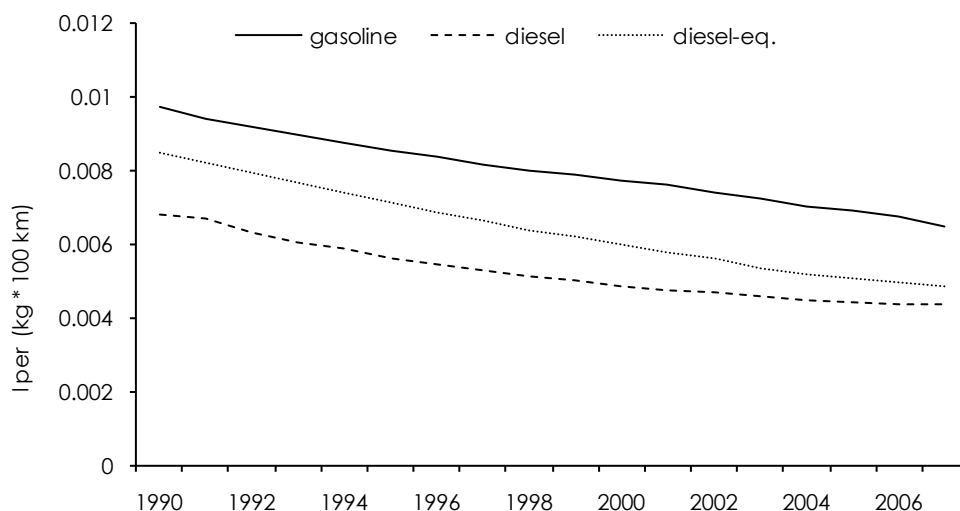
Source: WIFO calculations, MOVE.at.

Figure 28: Fuel efficiency of Austrian car fleet



Source: WIFO calculations, MOVE.at.

Figure 29: Indicator of thermodynamic efficiency



Source: WIFO calculations, MOVE.at.

### Summary

In the second half of the Lisbon Strategy from the year 2005 to 2010 Austria has set two priorities: fighting climate change and fostering the development of its environmental technology sector. These objectives are closely linked.

As regards efforts to mitigate climate change, since 2005 there has been a trend reversal in Austrian greenhouse gas emissions up to 2008 which is likely to have continued in 2009 not least due to the economic crisis. However, Austria so far has not reached the ambitious Kyoto target of a 13% reduction in greenhouse gases for the period of 2008 to 2012 compared with 1990. A broad approach is necessary to reduce greenhouse gas emissions further, relying both on technological innovations and changes in consumer behaviour. The economic effects of supporting projects aimed at combating climate change are considerable: one million euro of investment leads to the creation of between 14 and 17 jobs. A double, if not triple dividend can thus be gained from fighting climate change: investments contribute to GDP growth, reduce greenhouse gases and considerably lower long-term operating costs e.g. of buildings or industrial installations.

As regards the development of the environmental technologies sector, Austria is a clear success story with quickly rising turnover (12%), exports (12%) and employment (6%) in this sector, outpacing total manufacturing. In addition, environmental technology producers show an above average research intensity although they tend to profit less from public R&D support.

Overall, there is a range of policies in place targeting the reduction of greenhouse gas emissions and the support of environmental technologies. However, the efforts started in the

period 2005-2010 have to be increased, especially in view of the EU2020 targets regarding energy efficiency, renewable energy use and greenhouse gas emissions.

### 3.2.4 Foster Competition and SME Initiative

**Ines Fortin, Iain Paterson, Karin Schönpflug, Edith Skriner (IHS)**

The measures in the NRPs and the Lisbon strategy are aimed at creating and strengthening functioning competition in all member countries; by establishing strong industrial bases interlinked with functioning financial markets, improving high openness of member states' foreign trade sectors and a fostering of vital SME environments:

*The financial sector's contributions to a strong industrial basis*

#### **Expected Effects**

In Austria, like in other EU Member States except the UK, companies have typically used the banking sector rather than the stock market in order to raise new funds. Independent of whether financial systems are bank or stock market dominated, the degree of development and the efficiency of the financial system is important – not only for individual companies but also for long-term economic growth. Well-functioning financial systems have been found to be a key determinant of sustained economic growth.<sup>16</sup>

Some academic studies deal with the question whether market-based or bank-based financial systems are better for promoting growth. Cross-country studies based on a large number of countries (both industrial and developing countries) find that more developed financial systems enable higher economic growth rates, independent of whether those are stock market or bank dominated. Looking at growth and investment at the industry level, however, some relation between the structure of countries' financial systems and the growth and investment of industries in these countries can be reported.<sup>17</sup>

Empirical studies examining the effect of financial sector development (FSD) on economic growth have mainly used stock market indicators and indicators describing the banking sector as FSD variables. The most prominent ones are market capitalization in percent of GDP and bank loans to the private sector in percent of GDP. These indicators measure basically the size – which does not necessarily correspond to the degree of development or efficiency of financial systems. Yet, in the absence of better measures for a large sample of countries, these indicators have been widely used.

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<sup>16</sup> See, for example, King, Robert and Ross Levine (1993a): Finance and Growth, Schumpeter Might Be Right, *Quarterly Journal of Economics*, 108, 717-737; King, Robert und Ross Levine (1993b): Finance, Entrepreneurship and Growth: Theory and Evidence, *Journal of Monetary Economics*, 32, 513-542; and Levine, Ross (1997): Financial Development and Economic Growth, Views and Agenda, *Journal of Economic Literature*, 35(2), 688-726.

<sup>17</sup> See, for example, Carlin, Wendy und Colin Mayer (2003): Finance, investment, and growth, *Journal of Financial Economics*, 69, 191-226 and Carlin, Wendy und Colin Mayer (2000): How do financial systems affect economic performance?, in X. Vives (ed.), *Corporate Governance: Theoretical and Empirical Perspectives*, New York: CUP, 137-168.

Estimates of growth effects vary substantially. Regression coefficients of financial sector variables in growth regressions are mostly in the range of 0.005 to 0.15, when the dependent variable is logarithmic growth and the explaining variable is a measure of financial sector development (volume in percent of GDP). Generally, coefficients are higher when longer periods are considered and when initial GDP per capita is lower. This result indicates that the impact of financial sector development is realized only over long time-periods and that less developed countries – usually suffering from less developed financial systems – benefit more from an increase in financial sector development. Building upon the above argument on the impact of FSD on growth and upon empirical results of studies along this line we do not expect a considerable growth effect as a result of recent privatisations in Austria, since, in our view, they do not significantly improve the financial sector development, which is already fairly good.

### **Current situation**

It has often been complained that the Austrian Stock Exchange is under-valued. However, measures like the price earnings ratio do not seem to confirm this fact. Table 14 shows the price earnings ratio for benchmark indices of the EU-15 countries in 2009 and the average of that number in the period 2005-2009. Both graphs show that Austria ranks among the top 5 of the EU-15 Member States.

The Austrian Stock Exchange has indeed taken a number of measures to promote stock market activity; the privatisation schedule of the Austrian Federal Government has also contributed to strengthen the capital market, specifically by enabling a number of additional large companies to be listed at the stock market and thus increasing total stock market activity. In terms of stock market capitalisation in percent of GDP, Austria still ranks very low compared to other EU-15 Member States, however, suggesting a moderate degree of financial sector development if interpreted as a FSD variable. As we have argued above, however, market-based systems are not necessarily better than bank-based systems in promoting economic growth; and looking at the FSD variable domestic credit to the private sector, Austria ranks much higher (see Figure 31).

The Österreichische Industrie Holding AG (ÖIAG) is the Austrian Republic's investment and privatisation agency. Depending on its mandate from the Austrian government it partially or fully privatises its companies. After a number of privatisations over the last years – of which the privatisations of Österreichische Post AG in 2006 and of Austrian Airlines AG in 2009 were the last ones – ÖIAG is left with stakes in only three Austrian stock companies.<sup>18</sup> Table 14 shows the investment it held as of August 16, 2010. The programme of the current Austrian Federal Government 2007-2010 does not plan any further privatisations.

Similar to the restructuring of financial institutions and above-mentioned privatisations, the Austrian research funding sector and technology cooperation projects were restructured to

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<sup>18</sup> The additional privatisation proceeds of 323 million € in 2006 are due to the conversion of Telekom Austria convertible bonds.

ensure the optimal allocation of research funds between competing uses and the creation of international R&D partnerships.

CIR-CE (Cooperation in Innovation and Research with Central and Eastern Europe) is a technology cooperation programme with the aim to form strategic R&D partnerships and create research networks between Austria and partners in Central, Eastern and South-Eastern Europe. In 2006 14 Projects have been selected for a project time of 12 to 36 months, starting from the beginning of 2006 and with 2.1 million € of funding. Another 3,5 million € of project funds were made available for projects in 2007, which will be running until May 2011.

The restructuring of the Austrian research funding in 2004 led to the creation of a new central funding agency FFG (Forschungsförderungsgesellschaft) for research in the business sector. It comprises several former funding bodies (FFF, TIG, ASA, BIT) and was set up with the intention to centralize research funding (one-stop-shop) in different fields (industrial basic research, business innovation and international cooperation) in order to increase funding and research efficiency. Together with the restructuring, the financial funds of the FFG have been raised by contributions from other research programmes so that the yearly research budget of the FFG was increased from approximately 447 (2006), to 586 (2007), to 652 (2008) million Euro, with a drop due to recession to 534 (2009) and 452 million Euro in 2010.<sup>19</sup>

#### **Evaluation of actions in NRP**

In May 2006 the public offering of 34.3 million shares (including over-allotment options) by Österreichische Post AG was successfully carried out. A total of 49% of the share capital was sold, generating sales proceeds of approx. 650 million €. After this public offering, the ÖIAG is left with a 51% holding in the company. With company shares being eight times subscribed, the IPO was very successful. After the first trading day, the share was quoted 10% above the issue price of € 19. One third of the shares allocated went to private and institutional investors in Austria, the remainder was bought by international investors. The privatisation of Austrian Airlines AG was a longer and more complicated process, which suffered from the current, generally adverse economic conditions. In the end, the shares were sold to Lufthansa generating sales proceeds of approx. 0.4 million €.

#### **Effects of NPR 2006 measures on GDP and employment**

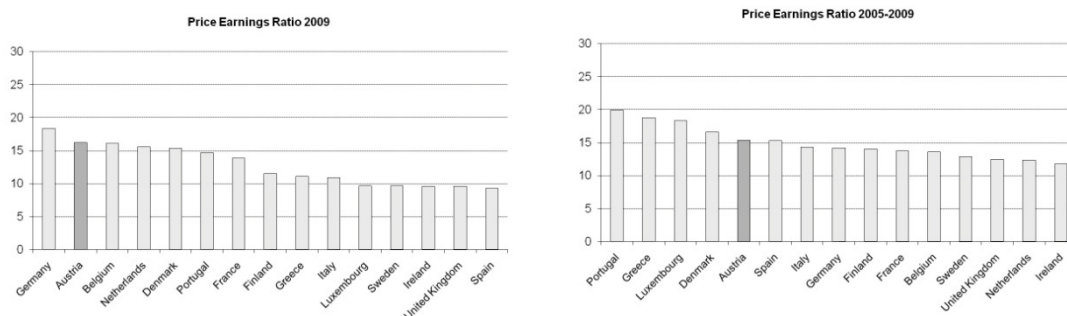
Following the line of argument concerning the impact of financial sector development on economic growth, the privatisations of Österreichische Post AG and of Austrian Airlines AG will have very little growth effect through the described channel since their volume seems to be too small.

New technology cooperation programmes (such as CIR-CE) and the restructuring of the Austrian research funding sector to use synergies of central handling (FFG) are expected to have positive long run effects on growth. Similar to other effects in this area, their nature is very indirect and diffuse and cannot be quantified.

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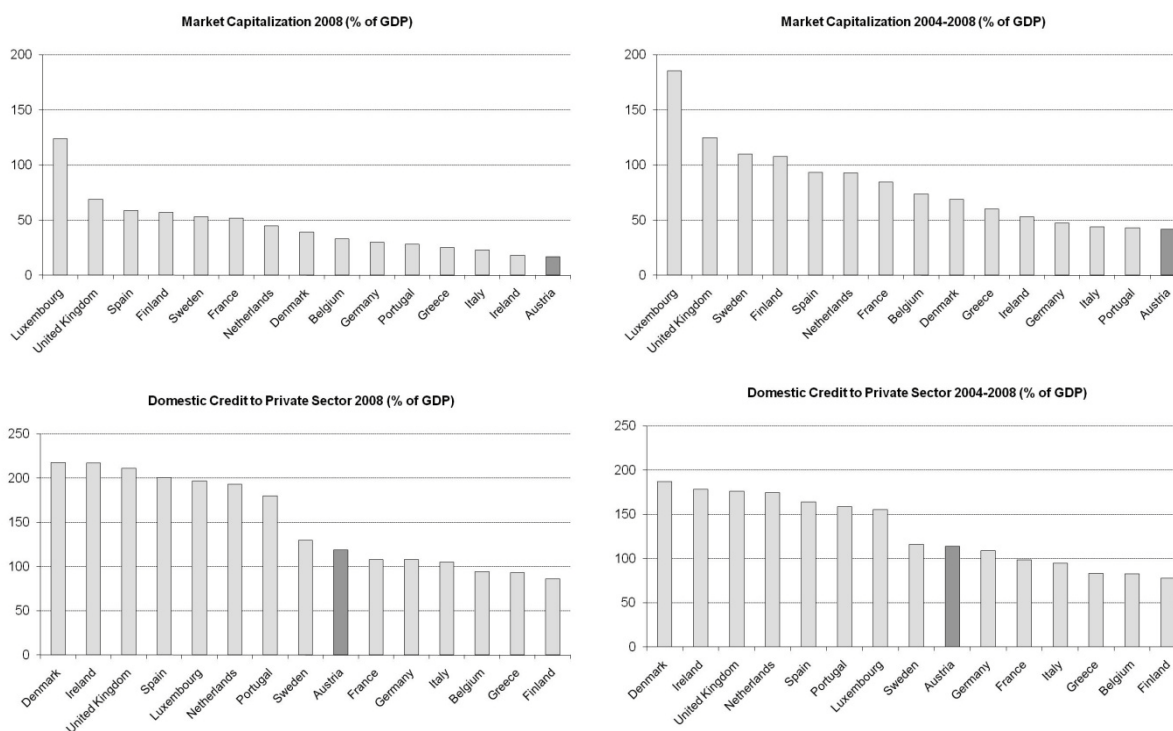
<sup>19</sup> Homepage of the FFG, in: <http://www.ffg.at/content.php?cid=570>

Figure 30: Price Earnings Ratio of Benchmark Indices in 2009 and 2005-2009



Source: Thomson Reuters Datastream

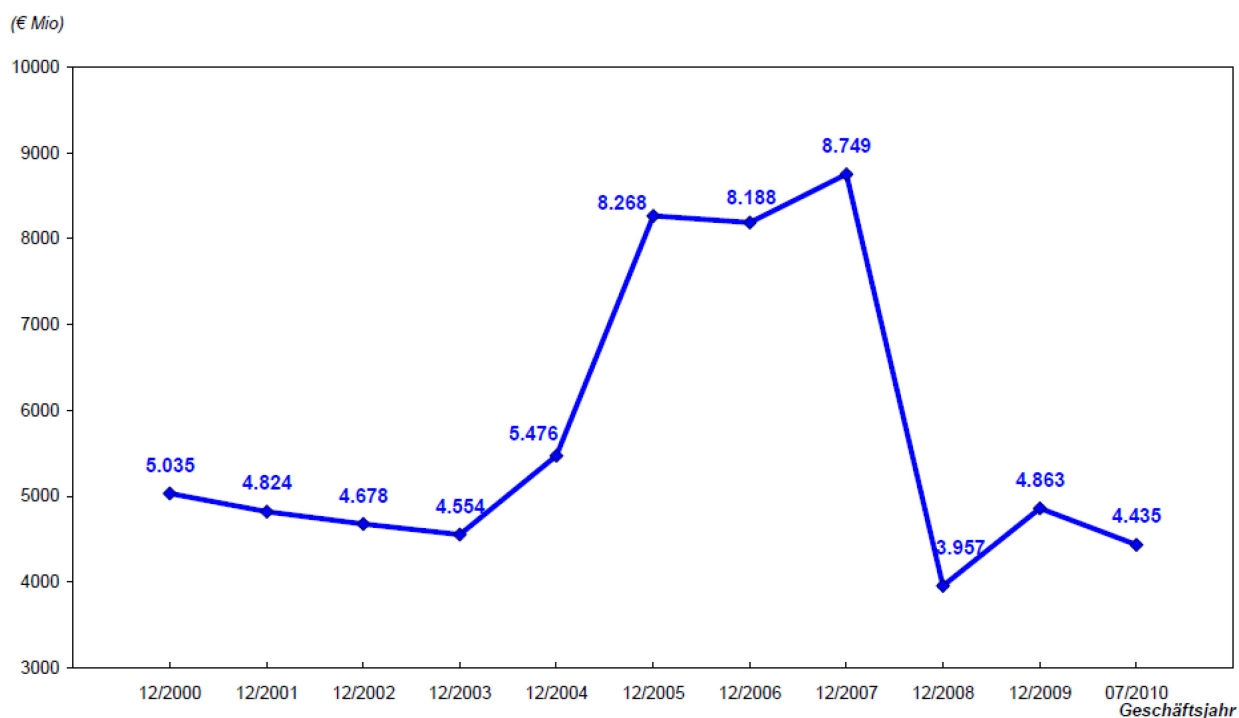
Figure 31: Financial Sector Indicators in 2008 and 2004-2008 for the EU-15 countries



Source: World Development Indicators.



Figure 32: ÖIAG Performance 2000-2006



Source: ÖIAG, [http://www.oeiag.at/upload/Wertentwicklung\\_31\\_07\\_2010e.pdf](http://www.oeiag.at/upload/Wertentwicklung_31_07_2010e.pdf).

Table 14: ÖIAG Portfolios of Listed Companies

	Number of shares	Number of Shares of ÖIAG	ÖIAG share	Share price 29.09.2006	Share price 16.08.2010	Market Value ÖIAG 29.09.2006	Market Value ÖIAG 16.08.2010
	Mio	Mio		EUR	EUR	Mio EUR	Mio EUR
OMV	300	94.50	31.5%	40.86	26.13	3,861.27	2,469.3
Telekom Austria	443	125.92	28.4%	19.90	9.56	2,505.81	1,203.8
POST AG	67.55	35.70	52.8%	30.05	20.05	1,072.79	715.8
Total						7,440.01*	4,388.8

Source: ÖIAG, [http://www.oeiag.at/upload/Monatsbericht\\_B%C3%B6rsebetrachtung\\_16\\_08\\_2010\\_d.pdf](http://www.oeiag.at/upload/Monatsbericht_B%C3%B6rsebetrachtung_16_08_2010_d.pdf)

\*This value is excluding the AUA that was still a part of ÖIAG in 2006.

## *Extend and deepen the internal market for financial services*

### **Expected Effects**

The primary aim of this policy field is to integrate and consolidate the European Union financial sector and thereby increase its efficiency.

Empirical studies on the effect of securities market integration have estimated significant economic benefits. A study prepared by London Economics with Price Waterhouse Coopers provided a conservative estimate of a 1.1% increase in the baseline level of EU GDP over 10 years. Another study, prepared by the Centre for Economic Policy Research found that the growth rate in the value-added in EU manufacturing would increase by 0.7%.<sup>20</sup>

### **Current situation**

The EU's *Financial Services Action Plan* (FSAP) was established in 1999<sup>21</sup> to provide advice to strengthen the financial systems of member countries by facilitating early detection of financial sector vulnerabilities and helping to identify financial sector development needs. The FSAP was designed to open up a single market for financial services in the EU and it comprises measures<sup>22</sup> designed to harmonise the member states' rules on securities, banking, insurance, mortgages, pensions and all other forms of financial transaction. At the beginning of 2008, a measure on the prevention of the use of the financial system for the purpose of money laundering and terrorist financing was added to the previous list.<sup>23</sup> In Austria, all directives have been transposed into national law, and – in nearly all the cases – Austria has been able to meet the transposition deadlines.<sup>24</sup>

The aim of the *Single European Payment Area* (SEPA) is to establish an integrated market for non-cash payment services (e.g. by credit card, debit card, bank transfer or direct debit), which is subject to effective competition and where there is no distinction between cross-border and national payments within the euro area.<sup>25</sup> The necessary legal framework is provided by the Payment Services Directive (PSD).<sup>26</sup> The realization of the Single European Payment Area is expected to increase competition and facilitate new business opportunities, thereby resulting in gains for society. Although the SEPA realization is of political importance, it has been primarily be seen as a market-led process, which would only be supported by

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<sup>20</sup> The *Giovannini Group* (2003): Second Report on EU Clearing and Settlement Arrangements, Brussels, p.39.

<sup>21</sup> Financial Services: Implementing the Framework for Financial Markets: Action Plan, COM(1999)232, 11.5.1999

<sup>22</sup> See the section Financial Services Action Plan (FSAP) on the Financial Services Policy webpage of the European Commission, [http://ec.europa.eu/internal\\_market/finances/policy/index\\_en.htm](http://ec.europa.eu/internal_market/finances/policy/index_en.htm).

<sup>23</sup> Directive 2005/60/EC of the European Parliament and of the Council of 26 October 2005 (3rd Money Laundering Directive).

<sup>24</sup> See the documents on the transposition of FSAP and POST FSAP directives (August 25, 2010) at [http://ec.europa.eu/internal\\_market/finances/policy/index\\_en.htm#Financial\\_Services\\_Action\\_Plan](http://ec.europa.eu/internal_market/finances/policy/index_en.htm#Financial_Services_Action_Plan).

<sup>25</sup> See [http://ec.europa.eu/internal\\_market/payments/sepa/index\\_en.htm](http://ec.europa.eu/internal_market/payments/sepa/index_en.htm).

<sup>26</sup> See Directive 2007/64/EC of the European Parliament and of the Council of 13 November 2007.

policy actions when necessary. Work on SEPA implementation is closely watched and guided by the European Commission (EC) and the European Central Bank (ECB).

### **Evaluation of actions in NRP**

All FSAP Directives and POST FSAP Directives due to be transposed to national law by September 2010, have been successfully transposed into national Austrian law. The overall goal of FSAP measures is to improve the efficiency of the EU financial sector – being one single financial system rather than a collection of separate national systems – as a motor for economic growth. While assessing the effect of individual FSAP measures on economic growth is not feasible, it has become undisputable that there is a strong link between financial development, and thus the FSAP measures, and economic growth. Within the SEPA process, the Payment Services Directive was transposed to Austrian national law in due time, Table 15.

### **Effects of NPR 2006 measures on GDP and employment**

The actions listed in the NRP, in particular FSAP and SEPA, constitute an integral part of EU-wide programmes extending over longer time periods. Since the impact of the actions set in 2006 will be realized only long-term (and probably not be distinguishable from actions in the same programme taken in 2005 and 2007), we can only give an extremely rough estimate based on empirical studies reviewed above.

Provided all FSAP and SEPA actions have been successfully implemented, the overall long-term growth rate may be affected marginally.

### *Impact of openness on economic growth*

#### *Expected Effects*

International trade is a key to sustainable development in many economies. In particular in small and open economies, foreign trade has been the major source of growth. A comparison of the second half of the 1970s with the period 2005 to 2009 reveals that all industrialised countries have increased their trade share (Figure 34).

Researchers have devoted much effort to the question of whether higher trade openness stimulates economic growth. Most of the evidence is based either on case studies or on regression analysis, in which trade shares, tariff indexes, import duties, and black market premiums are explanatory variables. Lee et al. (2004) found that measures of openness have a positive impact on economic growth. Also Alcalá et al. (2004) found that international trade has an economically significant and statistically robust positive effect on productivity. Both also found a significantly positive aggregate scale effect. Open economies benefit from globalisation because they have access to new sources of supply for raw and intermediate materials, final consumer and producer goods, and labour. This reduces the domestic inflationary pressure on prices and wages.

However, the openness of countries is not only restricted to real economy transactions. Capital markets too have become increasingly global, which made them broader and more liquid but also increasing vulnerability to financial crises and volatility in stock markets. Cross border capital movements have gained increasing importance since the beginning of the 1990s. The ongoing integration process of the international capital market allows an open economy to borrow resources from the rest of the world or to lend them abroad. With the aid of foreign loans, an economy with a temporary income shortfall can avoid a sharp contraction of consumption and investment. Similarly, a country with ample savings can lend and participate in productive investment projects overseas. Because international borrowing and lending are possible, there is no reason for an open economy's consumption to be closely tied to its current output.

#### *Austrian Trade performance*

Austria is a small and open economy. Its degree of openness is relatively high with respect to the other industrialised countries. Compared to all member countries of the OECD, only Denmark, Ireland, the Netherlands, Belgium, the Czech Republic and Hungary showed a higher degree of openness (Figure 34). In the past decades, the Austrian opening process has been steadily increasing (Figure 35). During 1993 to 2007 it has even gained speed compared to the previous years. However, in the recent past, problems in the housing and banking sector in some countries have affected the economic activity all over the world and a synchronised downturn of the global business cycle followed. As a consequence, also economies with a healthy housing market or financial/banking sector have suffered a dramatic downturn in economic activity. The Austrian economy suffered from a swift decline in foreign demand. Exports dropped sharply, with the activities in the machinery/vehicle and the intermediate goods sector declining the most. Hence, the Austrian foreign trade ratio fell back to the level of 2004. In 2009, the share of total exports in GDP amounted to 50.5% as compared to 59.2% in the previous year. The downturn was primarily caused by the strong decline in goods exports. The share of goods exports in GDP fell to 35.4%. In the services industries the downturn was by far not so dramatic. The share in business related services and tourism fell to 10.7% and 4.5% respectively (Table 17). The share of income from foreign direct investments (FDI) abroad in GDP amounted to 2.7% (also Table 17). With the brightening of the global economic conditions the Austrian foreign sector will return to growth. This year the volume of total exports will grow by 11%, to 102.5 Bio. €. In 2011 exports may increase by 7.5% reaching an amount of 110.3 Bio. €. Hence, the foreign trade sector will contribute 4.1 percentage points to the yearly growth of GDP this and next year.

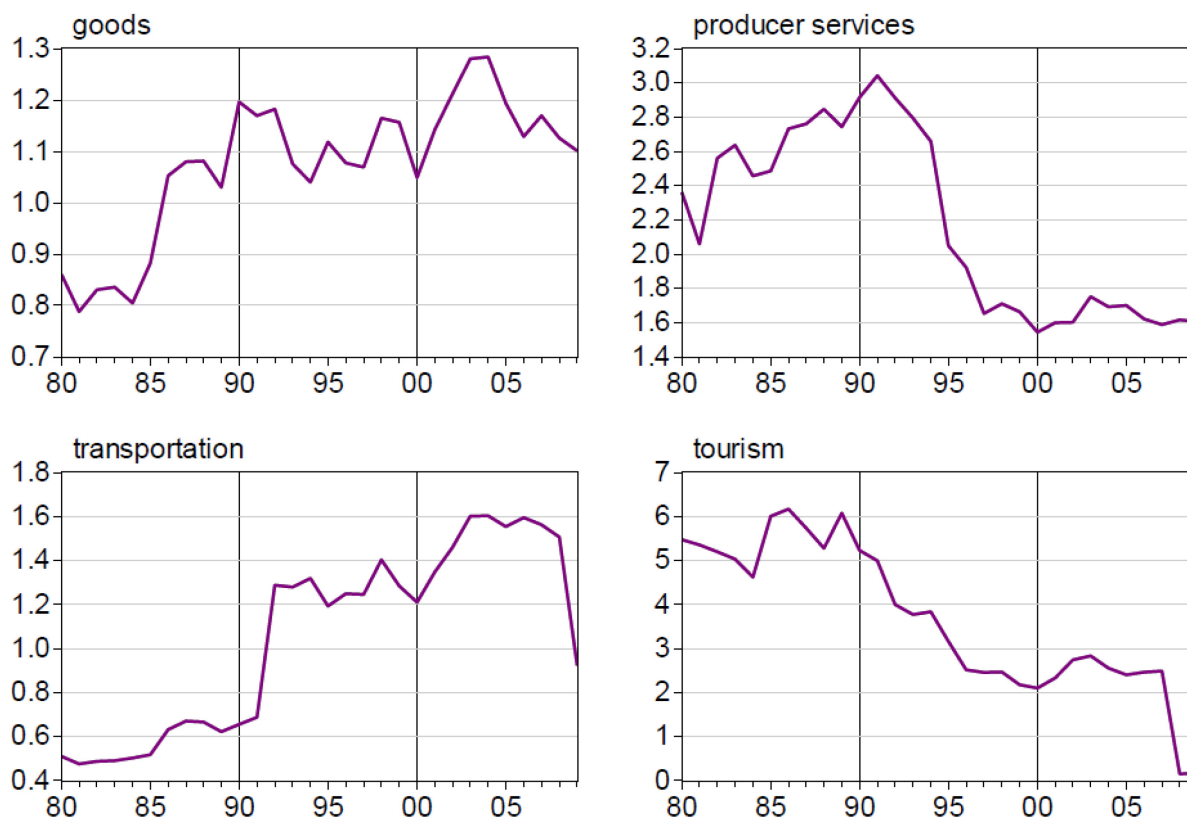
Also the contribution of exports to GDP-growth will increase again (Figure 36).

In the past decade (2000 to 2009), total exports have contributed 2 percentage points to the annual growth of GDP. The exports of goods contributed 1.4, the producer services 0.5 and tourism 0.1 percentage points. The positive impulses came from the Exports of intermediate goods, automotive goods and machinery. From a geographic perspective the closeness to

Central and Eastern European Countries, which performed strong economic growth during the past ten years, was an advantage for the Austrian export sector.

Figure 33 compares the development of Austrian exports of goods and services with the respective global aggregates. Between 1985 and 1990, the Austrian exports of goods performed a swift catch up process, and in the following years the sector was able to maintain market share. This is noteworthy, taking into account that the goods processing industries often produce in low-cost countries which implies for the Austrian goods producing industries an increase in competitive pressure. In 2009, the share of the Austrian exports of goods in the worldwide exports of goods amounted to 1.1%. Since 1980, the Austrian transport sector has been continuously gaining market share, however, in 2009 the Austrian share of transportation exports in the worldwide aggregate declined to 0.9% compared to 1.5% in the preceding year. In the mid-1990s, companies increased the focus on their core competences and they outsourced other business processes. As a result, worldwide exports of producer services gained increased importance. Figure 36 shows a declining share of the Austrian exports of producer services compared to the global aggregate during this period, and until today, the Austrian industries could not make up for this loss. In 2009, the share of Austrian exports of business services in the world aggregate amounted to 1.6%. Since 1989, the Austrian tourism exports have continuously lost market share compared to the global aggregate. The Austrian tourism exports have declined strongly during the crisis of 2008-09. In these two years, the share of the Austrian tourism exports fell below 0.2%, compared to 2.5% in 2007. The above comparison of the Austrian foreign trade with the world aggregates suggests that the growth potential in respect to producer services and tourism is not yet fully exploited in Austria. The analysis also shows that during the 2008-09 crisis, the exports in the transportation sector as well as the tourism exports recorded high market share losses.

Figure 33: Austrian export performance compared to the world aggregates, in percentage shares



Source: WTO, IHS-calculations.

#### Internationalisation initiative

With the "internationalisation drive" the federal government supports Austrian exporters to remain competitive in the light of structural changes in the global economy. The Ministry's most important partner in this respect is the Austrian Economic Chamber (WKO), which conducts the "go international" campaign ([www.go-international.at](http://www.go-international.at)). Besides, a number of other activities is also carried out, including a Headquarter Initiative by the Austrian Business Agency (ABA - [www.aba.gv.at](http://www.aba.gv.at)), the Cluster Internationalisation Initiative, the creation of the "Research Centre International Economics" (FIW - [www.fiw.at](http://www.fiw.at)) and the Economy & Development Information Office (IBWE - [www.ibwe.at](http://www.ibwe.at)).

In 2003, the Federal Ministry launched the "internationalisation drive" campaign to promote Austrian exports in close cooperation with the Austrian Economic Chamber (WKO). The joint BMWFJ-WKO initiative "go-international" is a comprehensive support programme aimed at developing the export market and increasing the number of exporters. A special focus of the initiative is the reduction of export barriers for SMEs.

Other initiatives include the establishment of an Economy & Development Information Office ([www.ibwe.at](http://www.ibwe.at)) for private sector business and development. IBWE was launched with the goal to give the Austrian Development Cooperation a stronger private sector and to create a strategic partnership between trade policy and development cooperation as demanded by the Austrian Trade Guidance published in 2008.

Also established within the scope of the internationalisation drive, the FIW Research Centre International Economics is the first research platform in Austria with a focus on external economic relations. The FIW-Project is a collaboration of the Austrian Institute of Economic Research (WIFO), the Vienna Institute for International Economic Studies (wiiw) and the Computing Centre for Economics and Social Sciences (WSR). The FIW-Project's objective is to support and interconnect the Austrian scientific community in the field of International Economics in order to advance know-how as well as scientific and economic policy oriented discussions. Researchers, students and experts in public offices receive information related to International Economics. The core pillar of the FIW-project is the bilingual web-platform which serves as the main communication tool ([www.fiw.at](http://www.fiw.at)).

#### *Summary*

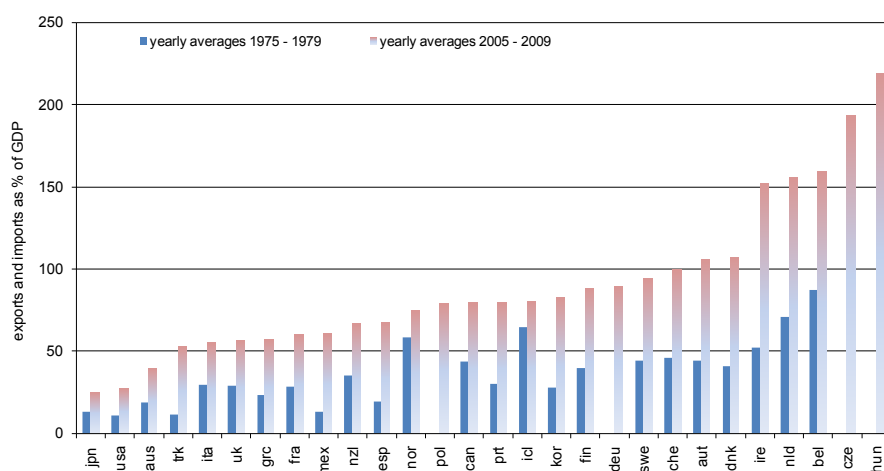
The Austrian economy has a high degree of openness. In the foreign trade sector, the export of manufactured goods still play a central role, while the foreign trade in services is relatively small. Compared to the rest of the World, the growth potential in respect to business services and tourism is not yet fully exploited in Austria. During the financial crisis, the Austrian exports dropped sharply, with the activities in the machinery/vehicle and the intermediate goods sector declining the most. In the current and next year, foreign trade will recover and will be a major source for growth in the Austrian economy. The Institute for Advanced Studies expects that exports will contribute 4.1 percentage points to the yearly growth of GDP this and next year. The internationalisation initiative will help to increase the competitiveness of the Austrian foreign trade sector, it will stimulate the exportability of SME's and knowledge based business services.

Table 15: Export shares (as % of GDP)

	total	goods	tourism	business services	transport	knowledge based services	income FDI
1990	37.1	24.9	6.7	5.4	n.a.	n.a.	n.a.
1995	34.9	24.2	5.0	5.7	1.5	2.9	0.0
2000	46.4	33.8	4.6	8.0	2.2	4.5	0.7
2005	54.2	39.5	4.7	10.0	3.0	5.4	2.9
2006	56.8	41.4	4.5	10.9	3.2	5.6	3.3
2007	59.3	43.6	4.4	11.3	3.2	6.1	4.2
2008	59.2	42.9	4.6	11.7	3.2	6.3	3.1
2009	50.5	35.4	4.5	10.7	2.8	5.9	2.7
2010*	51.9	37.1	4.4	10.4	n.a.	n.a.	n.a.
2011*	53.9	38.8	4.3	10.7	n.a.	n.a.	n.a.

Source: Statistik Austria, OenB, IHS; \*) IHS-Forecast, n.a.=not available.

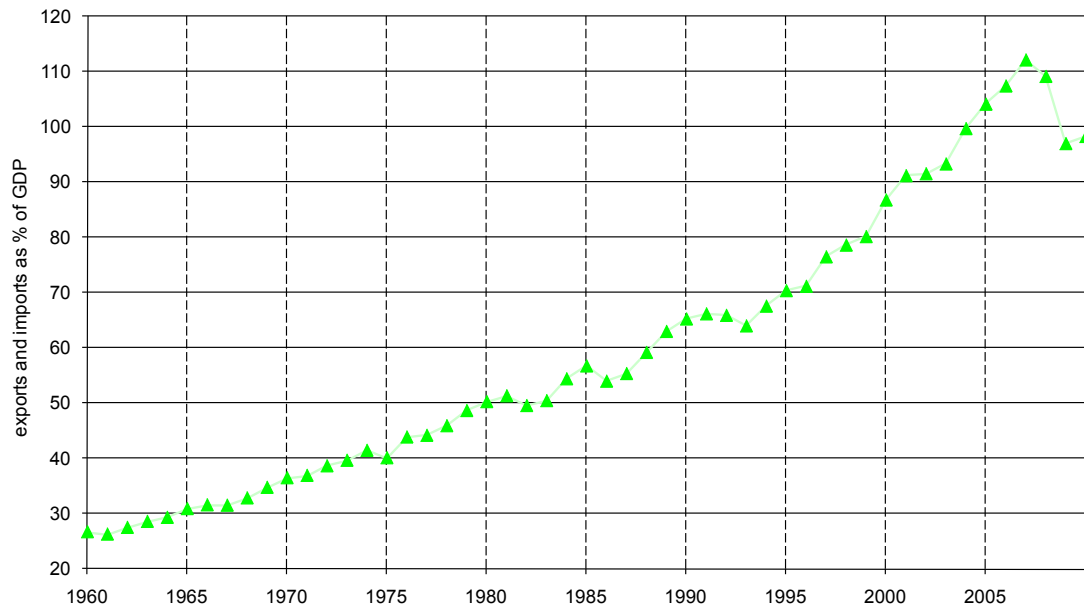
Figure 34: Openness of industrialised countries



Source: OECD, IHS-calculations.

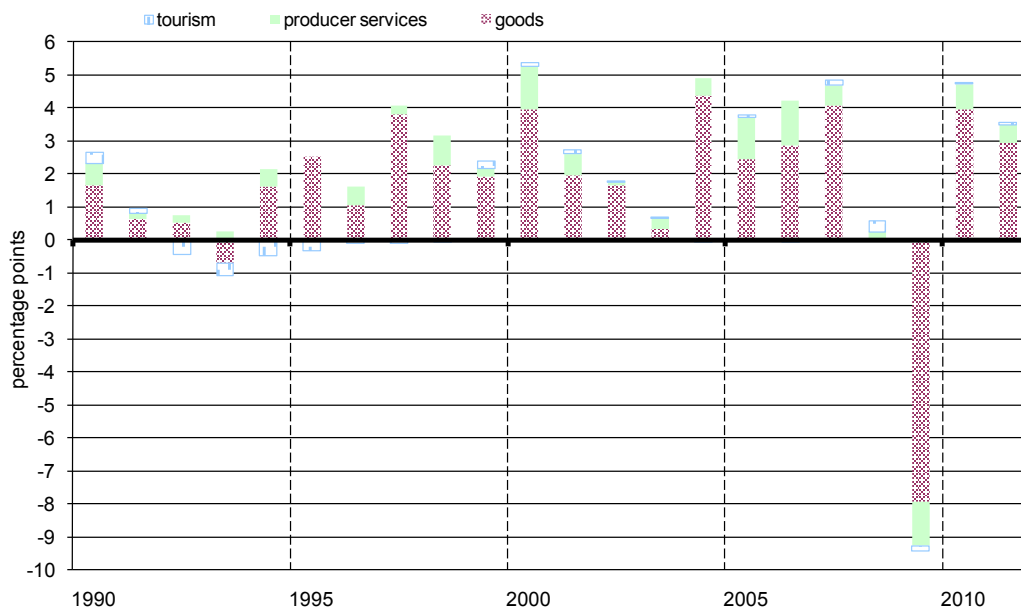


Figure 35: Degree of Openness of the Austrian Economy



Source: Statistik Austria, IHS-calculations.

Figure 36: Contribution of exports to GDP growth (Austria)



Source: Statistik Austria, IHS-calculations.

### Better Regulation, Entrepreneurial Culture and SME Support

As SMEs are the backbone of the European economy, targeted measures for SMEs are highly important. The initiatives for creating a competitive business environment and encouraging private initiative through better regulation promise positive effects in accordance with the Lisbon Strategy. In the NRP the Austrian government has addressed issues such as cost of financing, taxation of SMEs and administrative barriers, corresponding to the problems perceived by firms.

#### Present situation of the SME Sector

The SME sector in Austria has a relatively large-scale structure, where the percentage of micro enterprises is lower than the European average and the percentages of medium sized and small enterprises is higher. The contribution of SMEs to employment is generally in line with the European average (SMEs employ 67% of the workforce). As there are relatively few micro firms in Austria (87.5% of all SMEs, rather than 91.8% of SMEs in the EU27) they contribute less to employment (25%) than EU micro firms on average (30%). The share of the SME sector in total value added is slightly inferior to its European benchmark. It is mainly driven by below-average creation of value in micro enterprises (19% in Austria versus 21% average). At the same time the productivity of small and of medium-sized businesses is slightly superior to the European levels. (European Commission 2009)

Table 16: SMEs in Austria

	Enterprises			Employment			Value added		
	Austria		EU-27	Austria		EU-27	Austria		EU-27
	Number	Share	Share	Number	Share	Share	Billion €	Share	Share
Micro	261 259	87.5%	91.8%	648 079	25.2%	29.7%	28	18.7%	21.0%
Small	31 389	10.5%	6.9%	594 568	23.2%	20.7%	30	19.7%	18.9%
Medium-sized	4 848	1.7%	1.1%	483 839	18.8%	17.0%	33	21.3%	18.0%
<b>SMEs</b>	<b>297 496</b>	<b>99.7%</b>	<b>99.8%</b>	<b>1 726 486</b>	<b>67.3%</b>	<b>67.4%</b>	<b>91</b>	<b>59.7%</b>	<b>57.9%</b>
Large	1 017	0.3%	0.2%	840 483	32.7%	32.6%	61	40.3%	42.1%
Total	<b>298 513</b>	<b>100.0%</b>	<b>100.0%</b>	<b>2 566 969</b>	<b>100.0%</b>	<b>100.0%</b>	<b>152</b>	<b>100.0%</b>	<b>100.0%</b>

Source: Eurostat, elaborated by EIM. Data refer to the non-financial business economy (NACE C-I, K) and represent estimates for 2008. The estimates have been developed by EIM Business and Policy Research, based on 2006 Eurostat Structural Business Statistics figures.

In order to create a more competitive business environment and encourage private initiative through better regulation, EU Member States have been aiming at reducing administrative burdens (particularly for SMEs), simplify tax systems, strengthen access to finance and improve the quality of existing and new regulations concerning business activities. It was also stressed to provide access to micro loans and various forms of risk capital to promote entrepreneurial culture and create a SME-supportive environment.

The access to finance and effective administrative regulations is especially relevant. The absence of favourable financial and administrative conditions is one of the main constraints for SME's good business performance. Compared to large scale enterprises (LSEs), the financing for SMEs is be more costly and access to debt financing more difficult, due to

additional collateral requirements. The European Central Bank states that the availability of bank loans to SMEs deteriorated in the second half of 2009. 42% of SMEs reported a deterioration (compared with 43% in the first half), while 10% saw an improvement in the second half (unchanged from the first half). There was a less negative assessment of the availability of bank loans by large firms. (ECB 2010)

Measures in and since the NRP

#### *Reformed Competition Law*

Competition law in Austria has been brought in line with European Community law by the introduction of legal exceptions in the application of the law to avoid the formation of cartels. The main thrust of the change is the introduction of a principal witness leniency programme. Experience in Europe shows that this measure is vital for efficiently dismantling cartels. The law has been modernised in line with EC law (Council Regulation (EC) No. 1/2003) and came into force on January 1 2006. The adaptation of Austrian law was not mandatory; however there should efficiency gains accruing through this simplification for competition authorities in Austria and the EU.

Inasmuch as competition serves the interests of firms and consumers, innovation and thus investment in new products is promoted and welfare gains arise from an increasing efficiency of the competition law and effectiveness of the competition authority. The registration of mergers with the Federal Competition Authority (in place of the Cartel Court previously) is claimed by the Federal Ministry of Economics, Family and Youth to simplify administrative procedures; the administrative burden, however, now falls on the FCA, which dealt with 1252 cases since its founding in July 2002 (as of September 20<sup>th</sup> 2010).

Whereas the changes to the law could not be expected to bring significant quantifiable direct benefits in terms of employment and economic growth, a better functioning competitive environment has, however, indirect beneficial effects. Effective prevention of cartels implies decreasing the curbs on competition, the related context of product markets, regulations that curb competition may have several consequences for labour demand both at the firm level and in the aggregate.

#### *The Standard cost model*

In order to assess cost and benefits of legislative initiatives, the Austrian Federal Government launched an initiative for reducing the administrative burdens for enterprises incurred as a result of information and reporting obligations in April 2006. The aim is still to reduce administrative costs by 25% by 2010, using the Dutch Standard Cost Model, thus saving approximately € 2 billion. (Wirtschaftsbericht 2010, p. 84)

#### *Bundesvergabegesetz*

This law was established in 2006 and it tries to improve the functioning of the internal market which will enable the EU to reap full benefits from such enlarged market place. Public procurement, a key strategic sector in the EU economy, accounts for 17.23% of the average EU GDP. With public procurement amounting to 19.36% of GDP, Austria is above the EU average. (European Commission 2008)

#### *The Small Business Act*

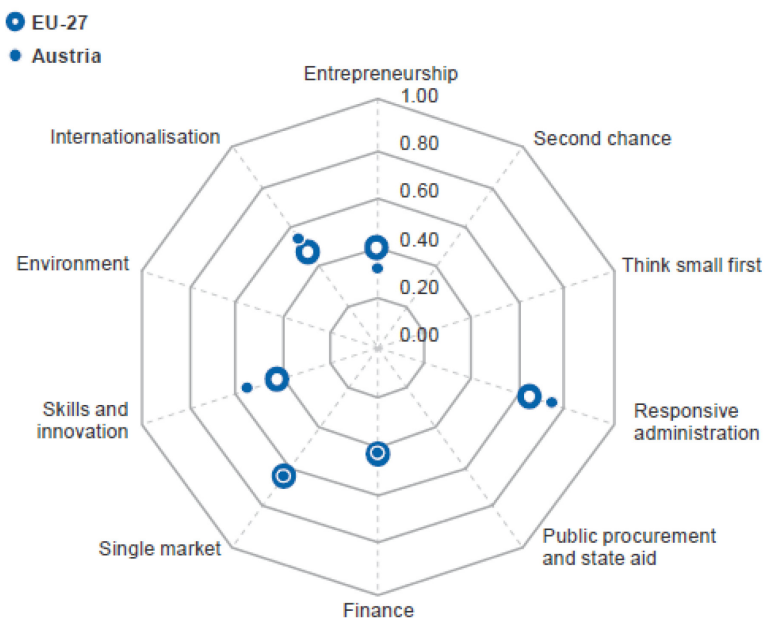
One of the most significant policy sets relevant for SMEs since the publication of the NRP in 2006 is the "Small Business Act" (SBA) for Europe adopted in June 2008. Its aim is to recognise the central role of SMEs in the EU economy and to put into place a comprehensive SME policy framework for the EU and its Member States. The SBA consists of a set of 10 principles to guide the conception and implementation of policies both at EU and national level. (European Commission 2009)

<i>The 10 principles of the SBA</i>
I Create an environment in which entrepreneurs and family businesses can thrive and entrepreneurship is rewarded
II Ensure that honest entrepreneurs who have faced bankruptcy quickly get a second chance
III Design rules according to the "Think Small First" principle
IV Make public administrations responsive to SMEs' needs
V Adapt public policy tools to SME needs: facilitate SMEs' participation in public procurement and better use State Aid possibilities for SMEs
VI Facilitate SMEs' access to finance and develop a legal and business environment supportive to timely payments in commercial transactions
VII Help SMEs to benefit more from the opportunities offered by the Single Market
VIII Promote the upgrading of skills in SMEs and all forms of innovation
IX Enable SMEs to turn environmental challenges into opportunities
X Encourage and support SMEs to benefit from the growth of markets

(European Commission 2008)

The 10 principles are sketched for the Austrian SME sector in the following graph: For 6 of the 10 principles data are available and for all but one Austria is better or equal to the EU average. Skills and innovation of Austrian SMEs is above average (nearly half of all Austrian SMEs are involved in innovation activities), as well as the degree of internationalisation (driven by exceptionally high investments abroad) and the responsiveness of administration (mostly driven by the availability of E-government). In the categories "Single Market" and "Finance" Austrian SMEs are performing at the EU average, only the category "Entrepreneurship" is below to the EU average, due to the comparatively low desire to become self-employed. For public procurement there is so far only one only indicator available which concerns the proportion of state aid earmarked to SMEs. For this position Austria ranks with 17% above the EU-27 average (11%).

Figure 37: The Austrian SBA Profile



Source: European Commission, SBA Factsheet Austria

[http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/pdf/final/sba\\_fact\\_sheet\\_austria\\_en.pdf](http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/pdf/final/sba_fact_sheet_austria_en.pdf)

In 2007-2009, Austria initiated actions in all 10 SBA areas:

**1. Entrepreneurship:** The expiration of inheritance and gift tax (Auslaufen der Erbschafts- und Schenkungssteuer) on August 1st 2008 facilitates transfers of businesses. To ensure that the new situation will not be abused, a new Gift Registration Law (Schenkungsmitteilgesetz) has been adopted. The Action Programme for SMEs (Aktionsprogramm für kleine und mittlere Unternehmen) for the years 2007/08, which had been implemented by the Federal Ministry of Economy, Family and Youth (BMWFJ) in cooperation with the Federal Economic Chamber, encompassed pilot- measures in the priority areas 'Young Entrepreneurs', 'Knowledge Management' and 'Future Markets Best Ager and Health'.

**2. Second chance:** In the 2007 amendment of the Trade Act (Gewerberechtsnovelle), that became effective in February 2008, a provision allowing for indulgence relating to a list of exclusion reasons from trade has been introduced. Among others, indulgence may be applied to the registration of a trade when the entrepreneur has gone bankrupt before under certain conditions.

**3. Think small first:** Austria has launched the initiative 'Lowering administrative costs for companies by cutting red tape' ('Verwaltungskosten senken für Unternehmen') to lower the costs for companies resulting from compliance with information requirements under federal law by 25% (compared to September 2007) by 2010 and those under Community law by 2012.

**4. Responsive administration:** The amendment of the Trade Act (Gewerberechtsnovelle 2006) as well as the amendment of the Commercial Code (Handelsgesetzbuch), now Enterprise Code (Unternehmensgesetzbuch) that came into force on January 1st, 2007, liberalised and facilitated business start-ups. The relevant authorities have been linked electronically which enables the prompt electronic delivery of trade registration and official information. One-stop-shops for trade registration have been implemented at the service points of the Economic Chambers. The Enterprise Portal (Unternehmensserviceportal; USP) was launched which provides a new onestop-shop e-government cross section implementation that allows for central access to all e-government applications of the public administration relevant for enterprises.

**5. Public procurement and state aid:** On May 1st, 2009, the new Threshold Value Decree (Schwellenwerteverordnung) came into force. The national, regional and local administrations can now directly place orders in the areas of construction, transport and services up to an order volume of EUR 100 000 (instead of EUR 40 000). The threshold value for the so called nonopen procedure without notice for construction works has been raised from EUR 120 000 to EUR 1 million. By reorganising the strategic focus of the Austria Wirtschaftsservice Gesellschaft (aws) in 2008, the support services available have been bundled into the three core programmes 'Support for Enterprise Funders', 'SMEs, Growth and Regional Support' and 'Technology and Innovation Support'. 72% of the support grants are given to small enterprises. In 2009 and 2010 the SME Fund (Mittelstandsfonds) at the aws receives an annual budget of EUR 40 million from the government.

**6. Finance:** The Tax Reform Act 2009 (Steuerreformgesetz 2009) that has been concluded in March 2009, foresees the introduction of a profit allowance (Gewinnfreibetrag) from 2010 onwards which will ameliorate the fiscal position of enterprises. The Economic Recovery Package I (Konjunkturbelebungs paket I) of October 2008 included the so called SME Billion (Mittelstandsmilliarde). This package basically consists of the following: An extension of EUR 200 million p.a. of the credit lines for ERP (European Recovery Programme) credits at beneficial interest conditions; thereby in total approx. EUR 600 million are available for investment credits each year. The introduction of an ERP-micro credit program to SMEs (providing credits of EUR 10.000 to EUR 30.000 at favourable conditions). An SME Fund (Mittelstandsfonds) to participate in growth projects has been implemented (with a capital of EUR 80 million).

**7. Single market:** CETMOS (Central European Trade Mark Observation Service) is a research programme introduced in September 2007 that has been elaborated in cooperation between the Austrian and the Hungarian Patent Office and facilitates the protection of trade marks in nine Central and Eastern European (CEE) countries.

**8. Skills and innovation:** Apprenticeship: Since autumn 2008, the possibility to combine apprenticeship and higher school leaving examination (General Certificate of Education) (Lehre und Matura) is promoted by financially supporting preparation trainings that are offered in addition to the apprenticeship programme. Also, the modularisation process of vocational training is still under way and amended curricula for apprenticeships are being introduced. The financial support for enterprises educating apprentices has been changed from a tax relief system to a grant system in order to raise attractiveness to companies. The Innovation Cheque (Innovationscheck) is a support measure for SMEs that has been introduced in 2008. It targets at the broadening of the Austrian research and innovation basis by introducing regular R&D respectively innovation services to SMEs. This measure is built on the insight that there is a considerable barrier from the side of the SMEs to contact recognised research facilities but also that most small enterprises cannot afford to run their own research facilities. The Innovation Cheque is issued for up to EUR 5.000.

**9. Environment:** The Export Initiative Environmental Technologies (Exportinitiative Umwelttechnologien) has become a successful brand that bundles activities and creates synergies to provide Austrian enterprises with professional export know-how for new target markets in an enlarged Europe and overseas. In the framework of the SME initiative to raise energy efficiency (KMU-Initiative zur Energieeffizienzsteigerung), introduced in spring 2009, a structured, comprehensive incentive system to carry out energy consulting in enterprises is being elaborated and implemented.

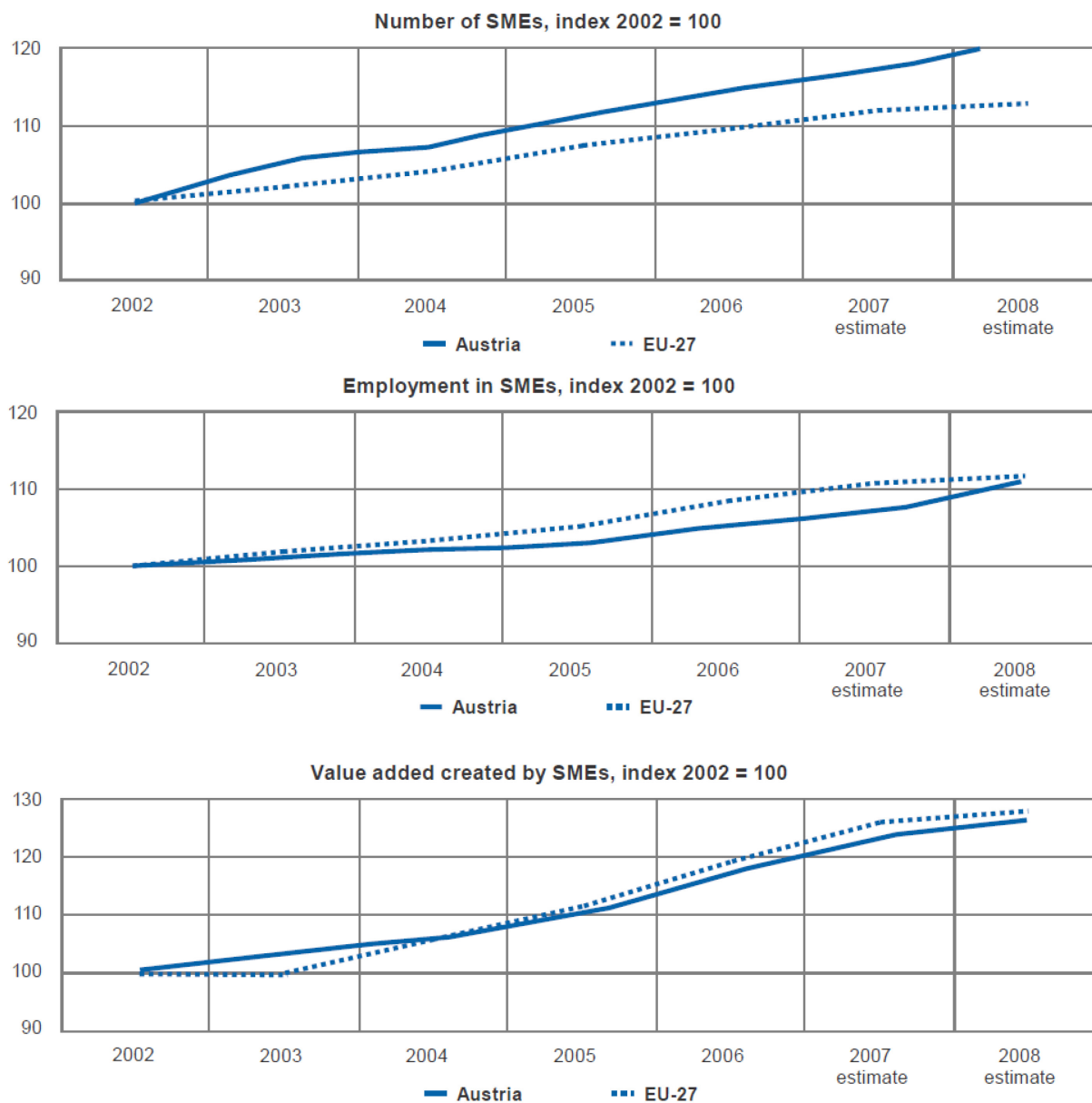
**10. Internationalisation:** The Export Financing Promotion Act (Ausfuhrfinanzierungsförderungsgesetz) has been amended in December 2008 due to the booming export development in the previous years and in the context of an unexpectedly high demand for public support services assuming liabilities for exports (resulting from the difficult situation on capital markets). The framework amount for the assumption of liabilities has therefore been extended from EUR 40 billion to EUR 45 billion. The Internationalisation Offensive (Internationalisierungs offensive; IO) has been relaunched with a budget raised by some 20% to EUR 25 million p.a. for 2009 and 2010.

Source: (European Commission 2009)

### Evaluation of NRP Initiatives

From 2002 to 2008 the number of SMEs has grown by 21% which is above the EU average (13%). Employment growth was moderate (11%) and slightly lower than the 12% EU average. Value added increased at the same pace as the EU value added (28%).

Figure 38: SME developments in Austria 2002-2008



Source: European Commission, SBA Factsheet Austria

[http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/pdf/final/sba\\_fact\\_sheet\\_austria\\_en.pdf](http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/pdf/final/sba_fact_sheet_austria_en.pdf)



### *Summary*

The Austrian Stock Exchange has taken a number of measures to promote stock market activity; the privatisation schedule of the Austrian Federal Government has also contributed to strengthen the capital market, specifically by enabling a number of additional large companies to be listed at the stock market and thus increasing total stock market activity. In terms of stock market capitalisation in percent of GDP, Austria still ranks very low compared to other EU-15 Member States, however, suggesting a moderate degree of financial sector development if interpreted as a FSD variable. However, market-based systems are not necessarily better than bank-based systems in promoting economic growth; and looking at the FSD variable domestic credit to the private sector, Austria ranks much higher

All FSAP Directives and POST FSAP Directives due to be transposed to national law by September 2010 have been successfully transposed into national Austrian law. It has become undisputable that there is a strong link between financial development, and thus the FSAP measures, and economic growth. Provided all FSAP and SEPA actions have been successfully implemented, the overall long-term growth rate may be affected marginally.

The Austrian economy has a high degree of openness. In the foreign trade sector, the export of manufactured goods still play a central role, while the foreign trade in services is relatively small. Compared to the rest of the World, the growth potential in respect to business services and tourism is not yet fully exploited in Austria. During the financial crisis, the Austrian exports dropped sharply, with the activities in the machinery/vehicle and the intermediate goods sector declining the most. In the current and next year, foreign trade will recover and will be a major source for growth in the Austrian economy. The Institute for Advanced Studies expects that exports will contribute 4.1 percentage points to the yearly growth of GDP this and next year. The internationalisation initiative will help to increase the competitiveness of the Austrian foreign trade sector, it will stimulate the exportability of SME's and knowledge based business services.

Due to the economic structure of the European Union targeted measures for SMEs are essential. Issues to be addressed in this context are the costs of financing, taxation of SMEs and the lowering of administrative barriers. Current important Austrian measures have been in accordance with the Small Business Act. In recent years the number of Austrian SMEs has grown more than the EU average, even though employment growth was only moderate and slightly lower than the EU average. Value added increased at the same pace as the EU value added. The latest Observatory of European SMEs by the European Commission found that Austrian SMEs strongly rely on product differentiation and niche marketing with tightening competition and were reporting to feel most revenues from innovation.

### **3.3 Labour market policies**

**Johannes Berger (IHS)**

#### *3.3.1 Introduction*

In an international comparison, the Austrian labour market is in a good shape in terms of unemployment and employment. This was already the case before the economic and financial crisis and has not changed as the impact of the crisis on employment and unemployment was less severe than in many other European countries. According to Eurostat, the total unemployment rate was 4.8 percent in 2009, which was the second lowest value in the European Union. Even though the crisis has already resulted in an increase of the unemployment rate in 2009, this number is similar to values before 2005. The unemployment rate of men was slightly higher than that of women, which can partly be ascribed to the impact of the crisis which predominantly hit industries with a higher share of male employment. According to most recent Eurostat data, the seasonally adjusted unemployment rate reduced to 4.4 percent in August 2010, this is the lowest value among all countries in the European Union.

Moreover, the long-term unemployment rate is relatively small in an EU-wide comparison. Still, attention should be paid to attenuate a possible increase of the long-term unemployment rate in the wake of the crisis. One should also keep in mind the development of youth unemployment in Austria. At 10 percent in 2009, the unemployment rate of people aged 15 to 24 years was still pronouncedly lower than the average in the European Union. However, it has almost doubled since 2000. This sharp increase can only to a small part be attributed to the impact of the crisis.

Employment rates are high in total and in most age groups. The total employment rate amounted to 71.6 percent in 2009, which is 6 percentage points above the EU-15 average and 3 percentage points higher than in 2005. Furthermore, female employment and activity rates are well above EU averages. With regard to older workers, however, a significant employment potential is not exploited as participation and employment rates remain at low levels. Considerable reform efforts aimed at raising the effective retirement age have been successful to some extent. The employment rate of people aged 55 to 64 years rose from 28.8 percent in 2004 to 41.1 percent in 2009. Still, the employment rate of older workers is below the EU average and additional effort is needed to further raise participation of older workers in order to foster the sustainability of the social system.

Special attention should also be paid to the labour market outcomes for less educated individuals. The unemployment rate of people with less than upper-secondary education ("low-skilled individuals") amounted to 10.1 percent in 2009, which was more than twice the total unemployment rate. Even more so, the employment rate of low-skilled individuals aged 25 to 64 years only amounted to 55.6 percent (compared to 53.3 percent in 2005), which is

close to the EU average. Given the much higher total employment rate in Austria, this outcome is not satisfactory.

### 3.3.2 Labour Market

#### *Labour Market Policies in Austria*

Labour market policies (LMP) are usually divided into active and passive labour market policies (ALMP and PLMP). The former aim to raise the probability of employment for certain groups that find it difficult to find a job. A further aim of ALMP is to increase the quality and productivity of jobs and thus to strengthen social cohesion. The purpose of PLMPs is to provide income support to unemployed people or early retirees so that they do not attempt directly to improve the labour market prospects.

As it was the case in many other policy areas, labour market policy was primarily dedicated to responding to the crisis so as to mitigate its impact on the labour market in the last two years. In addition to the two economic stimulus packages, two labour market packages were resolved. In 2009, funds provided for active labour market policy have been increased by 400 million Euro (around 0.15 percent of GDP) vis a vis 2008. In this respect, one measure was the revision of provisions regulating short-time work in Austria. Another important policy reform in recent years was the Employment Promotion Act which was adopted by the Austrian parliament in September 2005. This provided a legal basis for an expansion of labour market policy expenditure by 284.6 million Euros in 2006 and 2007. The major part of the Employment Promotion Act was implemented by the National Employment Service (AMS). Within the scope of an employment initiative called "Unternehmen Arbeitsplatz" the target was to reach additional 60.000 persons in five focus fields: i) vocational training and qualification in the field of health and nursing care services, ii) women, iii) youth, iv) men and v) combined wage model.<sup>27</sup>

Table 17 states expenditures for LMP in 2008 for a selected list of European countries and the European average. Austria spent a total of 1.8 percent of GDP on LMP. Thus, LMP expenditures in Austria were slightly above the EU average of 1.6 percent. With expenditures on LMP measures (which can be interpreted as expenditures for ALMP) of around 0.5 percent and LMP supports (can be interpreted as expenditures for PLMP) of around 1.2 percent of GDP, Austria spends slightly more money on active and passive LMP than the average. At 28 percent, the share of LMP measures in total LMP expenditures is the same as in the EU and in Germany, but lower than in Denmark and Sweden. At nearly 0.4 percent of GDP, by far the largest part of LMP measures was spent for training. This is also the highest amount among the countries considered here.

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<sup>27</sup> A more detailed documentation of ALMP in recent years can, inter alia, be found in the Implementation Reports to the National Reform Programmes and in BMASK (2010).

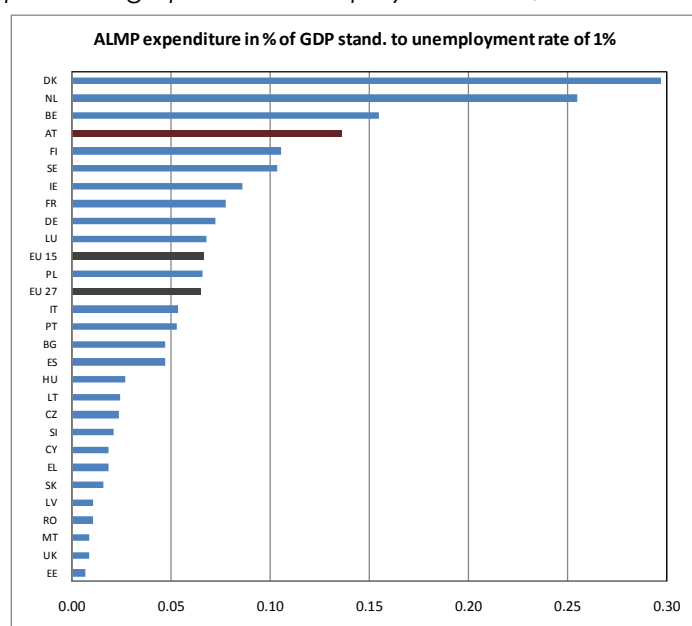
Table 17: Expenditures for Labour Market Policy in 2008 in percent of GDP

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Labour market services	0.14	0.14	0.14	0.15	0.16	0.18	0.18	0.17	0.18	0.17	0.16
Training	0.22	0.29	0.25	0.27	0.27	0.31	0.30	0.33	0.40	0.37	0.37
Job rotation and job sharing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Employment incentives	0.04	0.06	0.07	0.09	0.06	0.06	0.06	0.05	0.06	0.06	0.06
Supported employment and rehabilitation	0.03	0.02	0.03	0.04	0.04	0.03	0.04	0.04	0.04	0.03	0.04
Direct job creation	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Start-up incentives	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01
Out-of-work income maintenance and support	1.36	1.27	1.12	1.12	1.11	1.13	1.12	1.24	1.15	1.02	0.96
Early retirement	0.07	0.06	0.06	0.08	0.15	0.26	0.30	0.28	0.25	0.22	0.20
Total LMP (categories 1-9)	1.89	1.88	1.72	1.79	1.83	2.02	2.04	2.15	2.12	1.93	1.84
Total LMP measures (categories 2-7) (ALMP)	0.33	0.41	0.39	0.43	0.41	0.46	0.44	0.46	0.54	0.51	0.52
Total LMP measures and supports (categories 2-9)	1.75	1.74	1.58	1.64	1.67	1.84	1.86	1.98	1.95	1.76	1.68
Total LMP supports (categories 8-9) (PLMP)	1.42	1.33	1.19	1.20	1.26	1.39	1.42	1.52	1.40	1.25	1.16
Share of LMP measures on total LMP	17%	22%	23%	24%	23%	23%	22%	21%	26%	27%	28%
Total LMP measures norm. to 1 pp of unempl. rate	0.07	0.11	0.11	0.12	0.10	0.11	0.09	0.09	0.11	0.12	0.14

Source: Eurostat, own calculations.

Table 17 indicates that Austrian spending on ALMP is among the highest in the EU "per unemployed", i.e. if one takes into account the comparably low unemployment rate. Per percentage point of unemployment rate, Austria spent 0.14 percent of GDP on ALMP in 2008, which is around twice the EU average. Only three countries of the EU, Denmark, the Netherlands and Belgium spent a higher amount on ALMP per unemployed.

Figure 39: Expenditures on ALMP ("Total LMP measures") as percentage of GDP per percentage point of unemployment rate, 2008



Source: Eurostat, own calculations

Table 18 depicts the development of expenditures since 1998. The overall amount was fairly stable at around 2 percent of GDP, but expenditures for ALMP increased significantly from

0.33 percent of GDP in 1998 to more than 0.5 percent of GDP in 2008.<sup>28</sup> A large part of this increase can be traced back to the increase of training expenditures from 0.2 percent to nearly 0.4 percent of GDP. Action taken as a part of the Austrian NRP imply a significant increase of LMP measures since 2005 so that ALMP expenditures per percentage point of the unemployment rate increased pronouncedly from 0.09 percent to 0.14 percent of GDP.

Table 18: Expenditure for Labour Market Policy in percent of GDP in Austria, 1998-2008

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Labour market services	0.14	0.14	0.14	0.15	0.16	0.18	0.18	0.17	0.18	0.17	0.16
Training	0.22	0.29	0.25	0.27	0.27	0.31	0.30	0.33	0.40	0.37	0.37
Job rotation and job sharing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Employment incentives	0.04	0.06	0.07	0.09	0.06	0.06	0.06	0.05	0.06	0.06	0.06
Supported employment and rehabilitation	0.03	0.02	0.03	0.04	0.04	0.03	0.04	0.04	0.04	0.03	0.04
Direct job creation	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Start-up incentives	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01
Out-of-work income maintenance and support	1.36	1.27	1.12	1.12	1.11	1.13	1.12	1.24	1.15	1.02	0.96
Early retirement	0.07	0.06	0.06	0.08	0.15	0.26	0.30	0.28	0.25	0.22	0.20
Total LMP (categories 1-9)	1.89	1.88	1.72	1.79	1.83	2.02	2.04	2.15	2.12	1.93	1.84
Total LMP measures (categories 2-7)	0.33	0.41	0.39	0.43	0.41	0.46	0.44	0.46	0.54	0.51	0.52
Total LMP measures and supports (categories 2-9)	1.75	1.74	1.58	1.64	1.67	1.84	1.86	1.98	1.95	1.76	1.68
Total LMP supports (categories 8-9)	1.42	1.33	1.19	1.20	1.26	1.39	1.42	1.52	1.40	1.25	1.16
Share of LMP measures on total LMP	17%	22%	23%	24%	23%	23%	22%	21%	26%	27%	28%
Total LMP measures norm. to 1 pp of unempl. rate	0.07	0.11	0.11	0.12	0.10	0.11	0.09	0.09	0.11	0.12	0.14

Source: Eurostat, own calculations.

Table 19: Individuals supported by ALMP, yearly average 2005-2009

		Women	Men	Total	English Translation
Beschäftigung	Betriebliche Eingliederungsbeihilfe	13,504	13,340	26,844	Company Integration Subsidies
	Entfernungsbeihilfe	1,296	911	2,207	Journey-to-work Subsidies
	Gemeinnützige Beschäftigung	2,694	2,775	5,469	Job Schemes in Non-profit Sector / Community Work
	Kurzarbeit	2,915	12,352	15,226	Short-time Work Allowance
	Sozialökonomische Betriebe	4,780	5,546	10,326	Socio-economic enterprises
	<b>Beschäftigung</b>	<b>24,634</b>	<b>34,193</b>	<b>58,790</b>	<b>Employment</b>
Qualifizierung	Arbeitsstiftung	4,236	4,081	8,318	Labour Foundations
	Bildungsmaßnahmen	71,986	71,471	143,452	Training Measures, Active Job-Search for Unemployed
	Deckung des Lebensunterhalts	88,771	89,478	178,245	Subsistence Allowance
	Kurskosten	21,995	21,937	43,931	Allowances for Training Course Costs
	Kursnebenkosten	76,389	75,236	151,621	Allowances for Ancillary Course Costs
	Lehrstellen	9,958	14,069	24,027	Subsidies for Apprenticeships
	Schulung von Beschäftigten (ESF gefördert)	24,735	10,327	35,045	Training of Employees
	Qualifizierung für Beschäftigte in Kurzarbeit	64	577	641	Training of Employees Working Short Hours
	Unfallversicherung	9,075	7,680	16,754	Accident Insurance
	<b>Qualifizierung</b>	<b>132,897</b>	<b>125,297</b>	<b>258,165</b>	<b>Qualification</b>
Unterstützung	Beratung Betreuungseinrichtung	24,369	19,354	43,722	Funding for LMP Advisory and Guidance Centres
	Gründungsbeihilfe	1,661	2,589	4,250	Business Start-up Subsidies
	Kinderbetreuungsbeihilfe	6,191	147	6,338	Childcare Subsidy
	Unternehmensgründungsprogramm	2,455	3,716	6,171	Business Start-up Programme
	Vorstellungsbeihilfe	3,639	6,182	9,821	Job Interview Grants
	<b>Unterstützung</b>	<b>35,608</b>	<b>28,935</b>	<b>64,543</b>	<b>Support</b>
		<b>162,677</b>	<b>160,752</b>	<b>323,376</b>	

Source: Arbeitsmarktservice Austria.

<sup>28</sup> As a result of the crisis and the two labour market packages, ALMP expenditures increased even more in 2009 and 2010, for which Eurostat data are not available up to now.

Table 19 provides an overview of the number of individuals supported by ALMP measures.<sup>29</sup> On a yearly average of 2005-2009, 320,000 individuals have been participating in at least one measure.<sup>30</sup> On average, 58,800 individuals participated in an employment-related measure<sup>31</sup>, but a larger share (258,200 individuals) participated in different qualification measures. Measures in the third category (on average 64,500 participants) provide specific support to people who start work (either as employee or self-employed). In total, slightly more women are supported by ALMP than men.

#### *Empirical Assessment of ALMP (Literature Survey)*

Basically, empirical assessment of the impact of ALMP can be divided into micro- and macro-estimates. Whereas the former mostly use a matching-method to individually compare the outcome for participants and non-participants, the latter often aim at explaining macroeconomic data such as unemployment or employment by expenditures on ALMP, thus "automatically" taking into account general equilibrium effects.<sup>32</sup>

In a meta-analysis of micro-estimates, *Kluve (2007)* finds that qualification measures have a small positive effect on employment. Compared to these, employment incentives and subsidies and services and sanctions have a higher probability of yielding positive outcomes, whereas direct job creation programmes in the public sector are 30-40 percent less likely to show a positive outcome. *Lechner et al. (2005)* argue that the small impact of public sector sponsored training programmes reported in the micro-empirical literature can be explained by the short duration of these programmes and the short observation periods. According to their estimates, retraining with a typical duration of more than 20 months increases the employment probability in the seventh year after programme start by 10-15 percentage points. Short and long training programmes (5 and 9-12 months duration) increase the probability by 5-9 percentage points. Effects of practice firms programmes appear to be small. *Martin and Grubb (2001)* find that counselling and job-search programmes seem to be particularly cost-effective measures if they are combined with monitoring and enforcement of work tests. Furthermore, significant positive impacts are often found for hiring subsidies, but these often suffer from high deadweight costs and substitution effects. *Card et al. (2009)* provide a meta-analysis of 199 program estimates drawn from 97 micro-econometric evaluations. They find that job search assistance has relatively favourable short-run impacts, whereas classroom and on-the-job-training programs tend to show better outcomes in the

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<sup>29</sup> We provide numbers according to the Austrian classification of ALMP here since these numbers serve as input into the macroeconomic assessment of ALMP in the next chapter.

<sup>30</sup> For convenience, we do not show ALMP measures with less than 500 participants. As individuals can take part in more than one measure, the numbers of individuals in the specific measures do not sum to the total number of supported participants.

<sup>31</sup> 15,200 of them made use of short-time working (STW) arrangements, which was mainly due to 65,440 participants in 2009. The impact of STW will be analysed separately in more detail.

<sup>32</sup> It should be noted, though, that both types of evaluation methods suffer from different shortcomings so that the two types usefully complement each other.

medium-term than in the short-run. Public sector employment programs appear to have the least favourable impact. They also find that programs for youths are less likely to yield favourable outcomes than untargeted programs. *Graf et al. (2009)* evaluate the impact of the old-age part-time scheme on the Austrian labour market,<sup>33</sup> which is a policy to allow flexible retirement options for the elderly with the aim of increasing their labour supply. According to the matching estimates in their study, the employment probability increases slightly and the programme seems to reduce the unemployment risk. However, the total number of hours worked reduces significantly. Their analysis thus indicates that most workers substitute part-time work for full-time work so that the overall effect on labour supply is rather negative.

The second type of evaluation of ALMPs is based on macroeconomic outcomes. *Elmeskov et al. (1998)* find a negative, but only marginally significant impact of ALMP on the unemployment rate. Their independent variable to capture ALMP is public spending on ALMP per unemployed person, relative to output per capita. *Nickell and Layard (1999)* find a negative impact of ALMP spending on the unemployment rate (with a stronger impact than that found by *Elmeskov et al.*) but no significant impact on the employment rate. Their independent variable of interest is spending on ALMP per unemployed person as a percentage of GDP per labour force participant. *Boone and van Ours (2004)* find that expenditures on labour market training have the largest positive impact on labour market outcomes, whereas expenditures on public employment services appear to be able to reduce the unemployment rate but do not affect the employment rate. An illustration based on one of their estimates finds that an increase of training expenditures from 0.2 percent to 0.25 percent of GDP reduces the unemployment rate from a base value of 8 percent to 7.7 percent in the short-run and to 7.6 percent in the long-run. In line with *Boone and van Ours*, *Bassanini and Duval (2006)* find that labour market training is the only ALMP category with an impact on unemployment that is robust across several estimation methods. They find that an increase of ALMP spending on training programmes per unemployed as a percentage of GDP per capita by 4 percentage points would reduce unemployment by between 0.2 and 0.6 percentage points.

*Aumayr et al. (2009)* provide a macro-econometric assessment of promotion for apprenticeships in Austria. They find that the current number of participants significantly reduces the number of matches (i.e. there is a lock-in effect) but that the past number of participants significantly increases the number of matches in the economy. They also provide concrete examples (of offices representing the 'Austrian average') in order to get an impression of the marginal effect of this measure. Based on their estimates, they find that an increase of the current number of participants in Bludenz of 19 persons reduces matches by 1.9 persons, whereas an increase of past participants by 53 persons increases matches by 3.9

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<sup>33</sup> This measure is not covered in the macroeconomic assessment in the next chapter.

individuals. In a further regression, the authors also find a significant negative impact of current participants on the rate of individuals searching for a job ('Arbeitssuchendenrate').<sup>34</sup>

#### *Macroeconomic Evaluation of Labour Market Policies in Austria from 2005 to 2009*

In this chapter, we perform an assessment of the impact of ALMP on the Austrian economy by using TaxLab, a dynamic general equilibrium model with a special focus on the public sector ("Tax") and the labour market ("Lab") used at the IHS for the analysis of policy reforms and structural changes. The advantage of this type of evaluation is that it takes into account general equilibrium effects and the impact on indicators not considered by other evaluation methods (such as GDP or investment) can also be analysed. A short description of TaxLab can be found in the Appendix.

Table 20 provides information on the net-effects of different ALMP measures based on the estimates of *Lutz et al. (2005)* and *Lutz and Mahringer (2007)*. The estimates are differentiated according to sex and, except for Arbeitsstiftungen, age. Compared to Table 20, one can state that participants in the measures considered here make up a large part of participants in employment and qualification measures intended to reduce unemployment.

All of the employment measures considered here yield negative net-effects for young individuals, whereas the effects become more positive for older workers. The poor outcome for youth programmes is in line with the empirical literature. (see *Martin and Grubb (2001)*, *Kluve (2007)* or *Card et al. (2009)* for meta-analyses of ALMP) Some authors, such as *Lerman (1999)*, argue that poor attitudes towards work among disadvantaged youths might be a major factor in explaining the dismal record of youth measures. Qualification measures, in particular "Kurskosten" have pronouncedly more favourable effects. As TaxLab features separate matching processes for different age- and skill groups, it is possible to analyse the impact of ALMP on different groups within the macro-model. Effects of ALMP are predominantly more positive for women than for men.

*Table 20: Net-effects of certain ALMP measures; cumulated after 3 or 3.5 years*

	Men			Women		
	< 25 years	25-45 years	> 45 years	< 25 years	25-45 years	> 45 years
Betriebliche Eingliederungsbeihilfe	-81.0	23.0	-11.0	-36.0	42.0	83.0
Gemeinnützige Beschäftigung*	-96.0	-13.0	-107.7	-105.8	53.4	83.6
Sozialökonomische Betriebe*	-194.7	-85.5	108.7	-167.2	38.9	150.8
Arbeitsstiftung	-89.4	-89.4	-89.4	-40.6	-40.6	-40.6
Bildungsmaßnahmen	5.9	-3.1	-7.9	40.3	42.5	13.8
Kurskosten	54.0	33.8	44.3	37.8	66.4	41.4

\*cumulated after 3.5 years.

Source: *Lutz et al. (2005)*, *Lutz and Mahringer (2007)*, own calculations.

<sup>34</sup>To quantify marginal effects, they find that an increase of participants by 24 persons reduces the rate by 0.02 percentage points after 12 quarters, but this effect is not statistically significant (probably because the significant short-run effect already diminishes).



By taking into account these estimates and the number of participants in Table 20, we derive an assessment of the additional economy-wide amount of days spent in employment. In our simulation analysis, we follow *van der Linden (2005)* and the *European Commission (2006)* by assuming that ALMP results in a higher efficiency in the matching process that matches vacancies posted by firms and unemployed individuals who look for a job. This means that we assume that ALMP does not result in a higher productivity of employees.

As the unemployment rate of low-skilled workers is much higher, they receive a higher amount of ALMP spending than medium- and high-skilled individuals. As a consequence, the matching efficiency rises more pronounced in the low-skilled labour market so that low-skilled individuals experience the largest gains in employment prospects, their unemployment rate declines by about 0.7 percentage points. The overall unemployment rate declines by 0.3 percentage points. Employment rises by 0.3 percent (around 13,000 workers) on aggregate and by 0.75 percent for low-skilled individuals. Due to the higher matching efficiency, both workers and firms can find jobs and fill vacancies more easily. The expected value of job creation rises which leads firms to post more vacancies. Firms also expand investment to complement the employment gains. The capital stock rises by 0.25 percent in the long-run.

The concentration of ALMP spending on low-skilled workers has distributional consequences. Since employment gains are largest among the low-skilled, their marginal labour productivity actually reduces, which depresses low-skilled wages. Average labour costs of the firm for low-skilled workers decline by 0.25 percent while the average net wage roughly remains constant. The relative wage effect influences the response in other labour supply margins. Low-skilled workers supply a slightly smaller number of working hours. Two countervailing effects tend to offset each other in determining labour market participation. The lower unemployment rate boosts participation while lower wages have a negative effect for low-skilled individuals. Due to the gains in employment and the increase of the capital stock, GDP rises by 0.25 percent in the long-run. Mainly driven by the employment gains, disposable income of households increases which has a positive impact on private consumption. Concerning age-specific effects of Austrian ALMP, the analysis indicates that the considered measures are slightly more beneficial for unemployment of young and older workers.<sup>35</sup> Note, however, that we do not take into account the category "Lehrstellen", i.e. support for apprenticeships in this analysis. In addition, the negative effects of employment measures for young individuals as reported in Table 21 partly counteract the considerable support for this group via qualification measures.

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<sup>35</sup> Given the negative impact of employment measures for young individuals, the positive impact of the considered measures on this group is caused by the much higher participation in qualification measures.

Table 21: Long-run macroeconomic effects of ALMP measures considered

GDP	0.26%		
Investment	0.25%		
Capital	0.25%		
Capital Intensity (Capital/No. of workers)	-0.07%		
Consumption	0.11%		
Gross wage rate (labour costs per hour)	-0.02%	Average number of hours worked per worker	-0.02%
-low	-0.24%	-low	-0.07%
-medium	0.01%	-medium	-0.01%
-high	0.09%	-high	0.00%
Employment (no. of workers)	0.33%	Participation rate - 15-69 yrs. (change in pp)	0.00
-low	0.75%	-low	-0.01
-medium	0.26%	-medium	0.01
-high	0.23%	-high	0.01
Unemployment rate (change in pp)	-0.31	Unemployment rate (in pp) 15+	-0.30
-low	-0.74	Unemployment rate (in pp) 25+	-0.35
-medium	-0.26	Unemployment rate (in pp) 40+	-0.26
-high	-0.08	Unemployment rate (in pp) 55+	-0.32

Two final remarks are worth mentioning. First, the analysis provides information on the average effect of current ALMP measures. Thus, it is not clear whether an extension of ALMP results in proportionally higher effects. Second, Table 21 reports results within 3 resp. 3.5 years of support. By assuming that positive (and negative) effects of ALMP vanish after this period, our analysis provides a lower bound as employment effects might last for a longer time.

One of the measures in order to promote employment of older workers was a reduction of their social security contributions so that older workers are exempted from paying contributions to unemployment insurance (for employees older than 57, 6 percent of the gross wage), to accident insurance (for employees older than 60, 1.4 percent of gross income) and to the Familienlastenausgleichsfonds (for employees older than 60, 4.5 percent of gross income). In an analysis related to this point, Felderer et al. (2010) analyse a reduction of social security contributions by 2 percentage points for both employer and employee for individuals aged 55 and older at budgetary costs of 0.2 percent of GDP. According to their analysis, the participation rate of older workers increases by 0.6 percentage point so that total employment and GDP increases by 0.23 percent (around 9.400 persons) and 0.29 percent, respectively. Given that they analyse a less pronounced reduction of contributions but for a larger group (employees aged 55 and above instead of individuals aged 57 years and older), the outcome of the reform step taken by the government might be in a similar range.

As a measure to promote employment for workers with low income, contributions to unemployment insurance have been reduced in 2008. At the moment, employees with a monthly income below 1,155 Euro are exempted from paying the contribution and the contribution is gradually increased to the full amount of 6 percent of income beginning from 1,417 Euro. Felderer et al. (2010) provide an analysis of a related policy reform. According to

their analysis, the unemployment rate is reduced by 0.1 percentage point, with a more pronounced effect for low-skilled individuals (-0.3 percentage points). Employment and GDP increase by 0.3 percent.

#### *Short-Time Working Arrangements*

As most European countries, Austria has used publicly sponsored short-time working (STW) schemes in order to prevent otherwise profitable enterprises from going bankrupt and to avoid unnecessary labour shedding and the consequent losses of human capital with adverse effects on output growth and hysteresis effects in the wake of the crisis. These allowances partly compensate the employee for the loss of income associated with a reduction of working hours in response to temporary problems of the enterprise. In Austria, benefits to the employee amount to a minimum of 1/8 of the daily unemployment benefit per hour not worked.

The Austrian short-time working allowance was introduced in 1968 as a means of avoiding labour shedding in times of a slacking demand. Two amendments to this scheme were introduced in 2009. As a first reform step, human-resource-leasing agency workers were entitled to claim STW allowance. The maximum duration of the allowance was increased to 24 months. The necessary reduction in working hours has been changed to a range of between 10 percent and 90 percent of normal working hours. From the 7<sup>th</sup> month onwards, the employer's part of social contributions is refunded by the AMS. The scheme can be combined with specific training grants to support the improvement of qualifications for affected workers, but in contrast to some other countries, this combination is not compulsory. 60 percent of the training costs are paid by the AMS in that case. The level of employment has to be maintained during STW as well as some time afterwards (between 1 and 4 months, depending on the length of the arrangement).

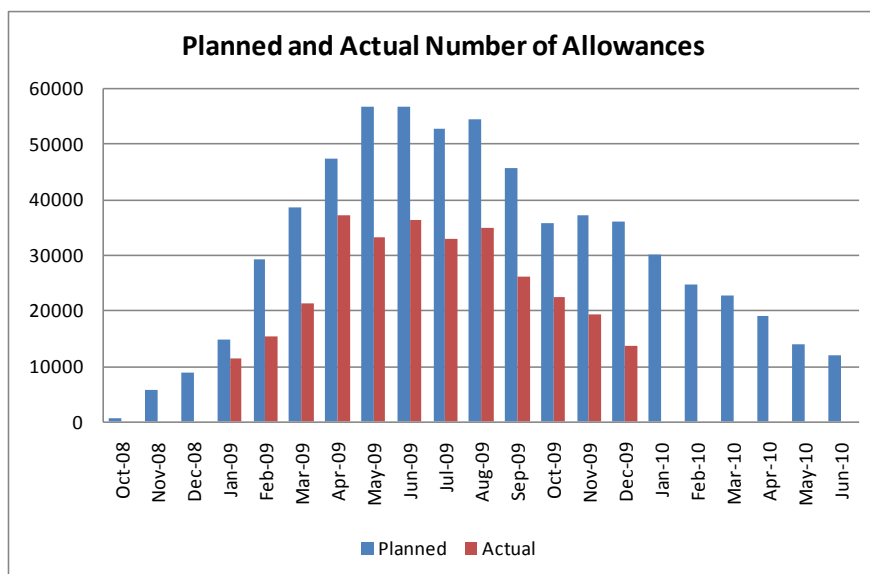
Figure 40 depicts the planned and actual number of STW allowances<sup>36</sup> in Austria from October 2008 to June 2010. The maximum number of actually affected workers was reached in April 2009 and was below 40,000. In total, more than 60,000 workers, i.e. more than 1.5 percent of the total labour force, have been affected by STW allowances in 2009. Of these, around 19 percent were women, 10 percent were aged below 25 years and 34 percent were aged 45 and above. 8,000 workers took part in training measures during STW. The average stock of workers in STW in 2009 amounted to 26,000 with an average reduction of working time of 26 percent. It also becomes evident that the amount of planned and actual workers in STW has decreased significantly in recent months. The total budgetary costs of the STW arrangement amounted to 110 million Euro in 2009.<sup>37</sup>

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<sup>36</sup> The latter number is lower because not all workers declared to work short-time by enterprises in advance (planned allowances) have actually been "recruited" later on (actual allowances).

<sup>37</sup> Data on short-time work allowances is provided in *BMASK (2009a)* and *BMASK (2009b)*.

Figure 40: Planned and Actual Number of Short-Term Work Allowances



Source: Arbeitsmarktservice Austria.

#### Rationale for Short-Time Work Allowances and empirical evaluation<sup>38</sup>

As already stated, the purpose of STW schemes is to avoid excessive layoffs, i.e. the permanent dismissal of workers during a downturn whose jobs would be viable in the long-run. Indeed, empirical evidence revised in *Arpaia et al.* (2010) and *OECD* (2010a) suggests that STW schemes have played an important role in keeping jobs during the crisis. The OECD states that such schemes can promote both equity and efficiency. Equity by sharing the burden of adjustment more equally across the workforce and efficiency by preventing transitory impacts from destroying generally valuable job matches.

A major potential drawback of STW schemes is that they might hold back productivity growth by delaying reallocation to more productive firms or sectors. It is still rather early to assess the impact of STW schemes in the long-run. However, given the rapidly declining number of workers in STW schemes (see Figure 40), it seems like the Austrian government has been rather successful in limiting this negative impact. Furthermore, STW schemes could potentially cause high deadweight costs as they constitute a kind of in-work subsidization that provides incentives for the employers to enrol even if no layoff is planned. However, evidence provided by the OECD suggests that the deadweight costs appear to be small compared to other variants of job subsidies.

A limited number of studies rely on firm-level data to analyse the impact of STW schemes, but these studies often suffer from a selection bias. That bias arises because participating firms tend to be less competitive than non-participating firms which should serve as a control

<sup>38</sup> A more comprehensive assessment of STW can be found in *Arpaia et al.* (2010) and the OECD "Employment Outlook" (2010a).

group. Thus, an aggregate approach across countries provides a fruitful alternative to micro studies. Descriptive analysis presented in *Arpaia et al. (2010)* suggests that STW schemes contributed to an annualized employment growth of 1.8 percentage points in industry's employment higher than what we would have seen otherwise. Econometric analysis confirms their descriptive analysis that STW schemes have been effective in reducing the variability of employment during the crisis.

The OECD makes use of quarterly data for the period 2003 Q1 to 2009 Q3 for 19 countries and four industries (manufacturing, construction, distribution and business services) to analyse the impact of STW schemes on employment, hours and wages during the recession. They find clear evidence that these schemes helped to preserve jobs of permanent workers during the crisis, while also increasing the reduction of average hours. They find no evidence for an impact of STW on wages and for an impact on employment and hours for temporary workers. Based on their estimates, they find that 3.983 permanent jobs (0.1 percent of the labour force) have been saved during the recession due to the STW scheme in Austria.

Empirical evidence also suggests that countries that already had the scheme in place before the crisis (and maybe amended them to tailor it more towards specific needs) have been more successful than those that introduced it during the wake of the crisis. According to the OECD, this might indicate that a small STW scheme even in good time, which can then be scaled up more easily in bad times, might be useful.

### 3.3.3 Education and Further Training

Empirical research suggests that human capital formation is one of the main drivers of growth in an economy. According to the indicators for monitoring the Employment Guidelines of the European Commission, Austria's performance in most of the aspects covered there is positive. A short review of these indicators can be found in Table 22.

At a level of 5.5 percent of GDP, Austria's total public expenditures on education are above the EU average of around 5 percent. Among the countries considered in Table 22, only Denmark spends a significantly higher amount on education. In addition, according to the recent addition of OECD's "Education at a Glance 2010" (OECD, 2010b) public expenditures for education per student are among the highest in the OECD.

In 2008, 84.5 percent of all individuals aged between 20 and 24 have attained at least upper secondary education (youth educational attainment) in Austria, so that this share is the highest among the countries considered here and 6 percentage points above the EU27 average. At 10.1 percent, the share of early school leavers, i.e. the percentage of the population aged 18-24 with at most lower secondary education and not in further education or training, is significantly lower than the EU average in 2008 although some, predominantly Eastern European countries, perform better. Steiner (2009) considers the impact of leaving education on labour market outcomes. He finds that unemployment risk is more than three times higher than the risk of non-leavers. Moreover, the risk of being out of the labour force is five times higher for this group. In this respect, the increase of teaching staff resources made

available as from the school year 2007/08 shall ensure a smaller number of students per classroom and is, among other aims, intended to decrease dropout rates. In addition, the pilot project "Neue Mittelschule" was introduced, which aims at avoiding too early "specialisation" of the children at the age of 10 years.

Similar to these indicators, adult participation in life-long learning can hardly be referred to as problematic. At 13.2 percent, the share of the adult population (25-64) participating in education and training is higher than the EU average. A closer look at the data reveals that the Austrian share is above the EU average for every single labour market status, educational level and age group (except for the group of older workers (55-64 years)<sup>39</sup>). However, adult participation is much higher in some countries, such as Denmark or the United Kingdom. An excessive consultation process on life-long learning was implemented in Austria in 2008. Steiner et al. (2010) evaluate adult education in Austria financed by ESF funds. The authors find an adequate orientation towards learners but some room for improvement. One of their suggestions is to increase supply of courses in the federal states and to increase the supply of courses aimed at catching up on lower secondary education.

At 1.4 percent of labour costs, investment by enterprises in training is slightly lower than the EU average. Again, some countries such as Denmark and France have a much higher share of investment by enterprises. One third of employees participate in Continuous Vocational Training (CVT), which is exactly the EU average. In this context, *Dearden et al.* (2006) estimate that an increase of enrolment in firm-sponsored training by 1 percentage point is associated with an increase of value added per worker of about 0.6 percent and an increase of wages by 0.3 percent.

The level of educational attainment in Austria is rather low. Only 18 percent of the adult population (aged 25 to 64 years) have attained tertiary education. This is among the lowest in the European Union and significantly lower than the EU average. It should be noted, though, that some experts argue that part of this difference can be explained by a lack of international comparability of educational degrees.

The importance of the level of educational attainment becomes evident when looking at Table 23. Whereas the unemployment rate of individuals aged 15-64 was at an overall level of 4.9 percent in 2009, it was lower for people with secondary (4.2 percent) and tertiary (2.3 percent) education. On the other hand, the unemployment rate of people with less than upper-secondary education ("low-skilled individuals") amounted to 10.1 percent in 2009, which was more than twice the total unemployment rate.

The development of these indicators in the first decade is shown in Table 24. Total public expenditure have slightly declined in recent years which can, however, be traced back to a shrinking youth dependency ratio in Austria. The share of youth educational attainment and early school leavers has been fairly stable between 2000 and 2008. Similarly, investment by

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<sup>39</sup> As the average remaining time in the labour force is shorter in Austria than in the EU average, this is consistent with economic theory.

enterprises in training and participation in CVT has only slightly increased between 1999 and 2005. However, the share of participants in life-long learning has increased significantly from 8.3 percent in 2000 to 13.2 percent in 2008. The share of adults with tertiary education has also increased in recent years, from 14.2 percent in 2000 to 18.1 percent in 2008. It should be noted, though, that the positive development of these last two indicators has primarily taken place in the first half of the decade.

Table 22: Austrian Performance in Further Education and Training, International Comparison

	EU27	EU15	DK	DE	FR	IT	NL	AT	UK
Total Pub. Expend. on Education as perc. of GDP (2007)	4,96	4.88*	7,83	4,5	5,59	4,29	5,32	<b>5,4</b>	5,39
Youth Educational Attainment (above ISCED 2) (2008)	78,5	75,8	71	74,1	83,7	76,5	76,2	<b>84,5</b>	78,2
Early School Leavers (under ISCED 3) (2008)	14,9	16,7	11,5	11,8	11,8	19,7	11,4	<b>10,1</b>	17
Adult Participation in Life-long Learning (2008)	9,6	11	30,2	7,9	7,2	6,3	17	<b>13,2</b>	19,9
Investment by Enterprises in Training of Adults (as % of Labour Costs) (2005)	1,6	1,6	2,7	1,3	2,3	1,2	2	<b>1,4</b>	1,3
Participation in CVT Share of Employees (2005)	33	34	35	30	46	29	34	<b>33</b>	33
Educational Attainment Share of Adults with tertiary education (2008)	24,3	25,9	34,5	25,4	27,4	14,4	32,2	<b>18,1</b>	32

\*2006

Source: EC (2010). Indicators for monitoring the Employment Guidelines, Eurostat.

Table 23: Unemployment Rate of people aged 15-64 years, 2009, by highest level of education attained

	Total	ISCED 0-2	ISCED 3-4	ISCED 5-6
Unemployment Rate	4.9	10.1	4.2	2.3

Source: Eurostat.

Table 24: Austrian Performance in Further Education and Training, Development

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total Pub. Expend. on Education as perc. of GDP		5.74	5.79	5.72	5.57	5.52	5.46	5.44	5.4	
Youth Educational Attainment (above ISCED 2)		85.1	85.1	85.3	84.2	85.8	85.9	85.8	84.1	84.5
Early School Leavers (under ISCED 3)		10.2	10.2	9.5	9 (b)	9.5	9.1	9.8	10.7	10.1
Adult Participation in Life-long Learning		8.3	8.2	7.5	8.6	11.6	12.9	13.1	12.8	13.2
Investment by Enterprises in Training of Adults (as % of Labour Costs)	1.3						1.4			
Participation in CVT Share of Employees	31						33			
Educational Attainment Share of Adults with tertiary education		14.2	14.5	16.9	16.5	18.8	17.8	17.6	17.6	18.1

(b): Break in series.

Source: EC (2010). Indicators for monitoring the Employment Guidelines, Eurostat.

### 3.3.4 Summary

According to our analysis, active labour market policy has contributed significantly to the low unemployment rate in Austria. We find that the measures considered in the simulation analysis decrease the total unemployment rate by 0.3 percentage points with a pronounced impact on unemployment of low-skilled individuals (-0.7 percentage points). Employment rises by 0.3 percent or 13,000 individuals, which is in line with an increase of GDP by ¼ percent in the long-run. Evidence in *Felderer et al.* (2010) suggests that a reduction of social security contributions of older workers has contributed to an increase of their participation rate by 0.6 percentage points and additional total employment of around 10,000 individuals. A separate chapter in this evaluation is devoted to the impact of short-time work in Austria. According to OECD (2010a) estimates, short-time work has contributed to an additional 4,000 employed individuals.

Austria's performance in education and training is quite good in international comparison. The performance is better than the EU average in most of the indicators considered here. However, Austria features a low share of tertiary educated adult individuals and the indicators for educational attainment of adults and adult participation in life-long learning have not improved in the second part of this decade. In addition, other European member states perform better than Austria in several of these indicators.

### 3.3.5 Appendix: Description of TaxLab

TaxLab is a dynamic computable general equilibrium model featuring a detailed description of the labour market and the public sector, especially the tax- and social security system as well as public transfers. TaxLab was already used and extended in a project for DG EMPL. The aim of the project was to provide the European Commission with a model containing an extremely detailed labour market representation, see *Berger et al.* (2009). The reports can be found at <http://ec.europa.eu/social/main.jsp?catId=113>. The behaviour of economic agents is derived from an in-depth micro-foundation for the actors involved, namely households (workers and retirees) and firms. Individuals maximize their lifetime utility by choosing the optimal number of hours worked if employed, the search intensity for a job if unemployed, participation in the labour market, and the retirement age. They also choose an optimal educational investment at the beginning of their lifetime (age 15), the effort invested in lifelong learning and an optimal inter-temporal allocation of consumption. Featuring eight different age groups (four of which are of working age, three considered as retired and one as a 'mixed group' including people of working age but eligible to retire) and three different skill groups (i.e. low- (ISCED<sup>40</sup> 0-2), medium- (ISCED 3-4) and high-skilled (ISCED 5-6) individuals), the structure of the household sector is particularly detailed. Based on existing work of *Grafenhofer et al.* (2007a,b) and *Jaag et al.* (2010), an Overlapping Generations

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<sup>40</sup> International Standard Classification of Education as designed by UNESCO.



(OLG) model in the spirit of *Samuelson* (1958) and *Diamond* (1965) is used in order to allow for life-cycle specific behaviour.

TaxLab contains search unemployment based on the pioneering theory reviewed by *Mortensen* (1986). A static search model as in *Boone and Bovenberg* (2002) is used rather than a dynamic model as in *Pissarides* (2000). The static version is simpler, yet it captures the essential insights of the dynamic one. Separate matching functions are introduced for different age and skill groups allowing for age- and skill-specific unemployment rates and policy reforms. Given the bargaining power of workers and firms, employers and employees bargain over wages. Firms produce goods by combining capital input and age- and skill-dependent labour input. In particular, a three-step CES-function is used to capture the feature of capital-skill complementarity. Our extended TaxLab model assumes monopolistic competition on the goods market. Firms maximize the present value of profits by optimally choosing the price level, the number of vacancies, the percentage of workers fired, the amount of firm-sponsored training, and the level of investment according to the q-theory of *Hayashi* (1982).

The model captures a detailed description of the public sector and relevant institutions (like labour market policy). The budget of the public sector is divided into a budget for social insurance revenues and expenditures and a general budget financing other expenses. Revenues of the general budget comprise all main taxes, e.g. personal income tax, corporate income tax, consumption taxes, capital and capital gains taxes. Public expenditures include government consumption, transfers to the social security systems and to households, subsidies to firms and debt servicing. Expenditures for social insurance are financed by social security contributions of employers and employees, taxes and/or transfers from the general budget. Actual economic data and empirical estimates are used to calibrate the model.

TaxLab is capable of analysing a wide range of policy reforms and changes of other external factors. For instance, simulation scenarios may include reforms of public finance, changes of pension regimes, implementation of active labour market policies (ALMP), policies to foster human capital formation (education and training), changes of the employment protection legislation regime, or financial support to employers or employees for low-income jobs.

Simulation results include effects of reforms on macroeconomic variables such as GDP, investment, private consumption, unemployment and employment rates, wages, prices and productivity. Household-specific variables can be presented in an aggregate manner but also on a more disaggregated level such as age- and/or skill-dependent. Based on the model, inter- as well as intra-generational and inter-temporal effects of reforms can be analysed.

## **4. Expected effects from meeting the Europe 2020 goals**

### **4.1 Bottlenecks with regard to the targets of the Europe 2020-Strategy<sup>41</sup>**

**Stefan Ederer, Jürgen Janger (WIFO)**

The Lisbon strategy expires in 2010. Its successor is "Europe 2020 – A European strategy for smart, sustainable and inclusive growth", which was presented by the EU Commission in March 2010 as the strategy for the next 10 years. It was agreed upon at the June 2010 session of the European Council. In order to strengthen the national "ownership" of the strategy, the European targets are being broken down into national targets. Furthermore, growth bottlenecks will be identified for each country. Combating these bottlenecks should form a central part of any reforms in the individual countries. This section aims at identifying the growth bottlenecks for Austria. It will list the key issues in the five areas covered by the Europe 2020-Strategy (research/innovation, employment, environment/energy, education, poverty).

#### *4.1.1 Research and development*

At the European level, a target of 3 per cent of GDP has been fixed for R&D expenditure. The corresponding national target for Austria is 3.76 percent. This ratio currently stands at 2.7 per cent. Indeed, regardless of Europe 2020 Austria should be setting itself ambitious research targets, given its high rank in per-capita income.

The most important bottle necks preventing an increase in research and development and thus in innovation are the following:

- a) Only a small number of businesses which carry out research (breadth of the basis for innovation) and also the concentration of R&D expenditure on relatively few businesses.
- b) Problems with the dynamics of founding innovative companies and especially problems with a low growth dynamic
- c) Quality of university research (applied and basic research)
- d) Quantity of basic university research

All the bottlenecks are interrelated and mutually affect each other. If more innovative companies were founded and their growth dynamic increased the number of businesses carrying out research would also increase which would in turn contribute to structural change. Reasons for the lack of any dynamic in founding innovative companies and in their lack of growth lie in the small share of tertiary education in Austria, in the inadequate availability of financing via venture capital to promote growth and in regulatory barriers. The inadequate availability of financing through venture capital is in itself due to, amongst other things, the lack of legal structures for the activities of venture capital funds. Furthermore the

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<sup>41</sup> This section is a summary of Ederer – Janger, 2010.

development of the capital market also suffers from the fact that minority share holders are being inadequately protected.

The quality of university research also leads, via various channels, to increased R&D expenditure by companies as well as to the founding and growth of new innovative companies. The quality of university research could be improved when compared with the European top performers in this area, such as Switzerland, Sweden and the Netherlands. Potential for improvement can firstly be seen in the financing structure of universities, namely - the fact that the quality of research carries very little weight (in financing decisions). Secondly it is due to the organisational structure of university research. The career path for researchers is still not in line with the usual international models (people can access tenure track positions without an international selection procedure). A lack of private and public funding explains why the total volume of university research efforts in Austria could be increased. A lack of funding hampers the establishment of competitive research infrastructures in Austria and on the participation in European research infrastructures. It also makes it more difficult to recruit the necessary national and international university researchers.

#### *4.1.2 Employment*

The employment goal at the EU level has been set at an employment ratio of 75 per cent of 20-64 year olds. Since Austria has already almost attained this ratio, national target should accordingly be higher. Furthermore, due to the expected decrease in the population of working age, a broadening of labour participation is necessary in order to provide a sufficiently high labour supply. The integration of a large proportion of the population into the labour market is not only the best way to reduce poverty and increase the chances of participation, but is also an essential condition for sustainably financing the welfare state. The main bottlenecks are:

- a) Employment rate of women, the elderly and migrants
- b) Low qualification of migrants
- c) Weak private domestic demand

The labour market performance of Austria lies in the upper middle level in the EU. Measured in relation to the population between the ages of 15 and 64, an above-average quantity of people is economically active. This does not apply to some particular groups:

- The employment rate of older persons is far below the EU average. The reasons for inactivity in this group are mainly retirement as well as illness or invalidity:
  - A low early retirement age (for people with long term insurance, heavy labour pensions, and corridor pensions) and high payments in the case of a long insurance period are incentives for early retirement.
  - Workloads in Austria are partly higher than the EU average; reorganising workplaces into places which are suitable for older workers has to be promoted.

- The measures to preserve the employability as well as for the reintegration of older unemployed people through requalification and further education and qualification are not sufficient.
- The employment rate of women is higher than the EU average but remarkably lower than the employment rate of men. Long interruptions because of caring for the family are the main explanation for the gender-specific distribution between paid and unpaid work in Austria:
  - The child care system in Austria is not adequate. The key for a higher integration of women into the labour market is the availability and universal access to a quantitatively and qualitatively sufficient, and high-calibre as well as affordable external child care system, in particular for children under the age of 3. The daily and yearly opening hours need to be compatible with regular working hours.
  - The supply of inexpensive out-patient and in-patient care is not sufficient.
  - Due to gender-related wage differences, which cannot be explained by working hours or the horizontal segregation of the labour market, a negative incentive to work for women exists.
  - There is potential in the system of paternity/maternity leave to create incentives for work to be interrupted for a shorter period of time and for a fairer distribution of paternity/maternity leave. The dependence of childcare benefits on income, shorter periods of availability of benefits and higher flexibility – together with a high quality child care system – all increase the labour market participation of women.
- The employment rate of migrants in Austria is lower than the overall employment rate. This is due to the lower qualification of migrants.

Generally, an increase in labour market participation of all groups is supported by

- education and qualification measures,
- a good employment situation, and
- low taxes on labour and low social insurance payments.

The tax on labour in Austria is much higher compared with other countries and is steadily increasing. Austria is characterized by a high tax on wages and wage increases which already starts at low incomes. In addition there is a large gap between labour costs to firms and the net wage for workers. Income taxes and taxes on profit, as well as the share of environmental taxes are low. The share of property taxes in tax revenues compared to the EU is low and remarkably actually decreasing. The high taxes on labour and the early start of tax progression are a negative incentive for employment.

The share of highly qualified migrants in Austria is considerably lower than the average of the old EU countries. Consequently the share of medium qualified migrants is higher. Other EU countries are more successful in attracting highly qualified migrants, both in relation to the average qualification of migrants and to the qualification structure of the domestic workforce. This is not due to the different structures in the countries of origin but rather that from the pool of migrants in the EU, Austria "selects" the ones with the lowest qualifications.

Established networks and language skills are the most important factors when migrants make decisions about location. The actual qualification structure consequently has a tendency to be passed on to future generations of migrants.

The share of overqualified migrants is higher compared to the Austrian average, the share of under-qualified migrants is lower. In comparison with the EU average, Austria only has a higher share of under-qualified migrants. The number of overqualified migrants is on a par with the European average. Over qualification means that migrants do not get a job corresponding to their qualifications, for instance due to a lack of acceptance of qualifications obtained abroad. The higher share of under-qualified migrants indicates that it is more difficult for migrants to obtain a higher level of qualification once inside a company. Improving this kind of skill-transfer seems to be necessary.

Beside structural problems on the supply side, growth and employment in Austria suffer from a persistent weakness in domestic demand. This was already evident at the beginning of the decade, and was intensified during the current economic crisis. The development of aggregate demand is not only important for the economic cycle but also has a great impact on growth and employment in the medium and long run. Both investment and private consumption only grow at below average rates.

Causes of the weak development of private investment expenditure are:

- Continuous low capacity utilization
- Unstable sales expectations

Both elements reduce the willingness of firms to invest in additional production capacity. Measures to support aggregate demand and stabilize the expectations of firms consequently also promote investment activities.

Causes of the weak development of private consumption expenditure are:

- High unemployment
- Weak evolution of mass incomes
- Shift of income distribution towards upper incomes
- High taxes on labour and social insurance contributions
- A rise in the savings ratio in relation to disposable income of private households
- Anticipation of pension losses and cutbacks of public services

The high increase in unemployment and the anticipation of lower pensions and public services has reduced consumer sentiment and dampened the consumption rate. By saving on a precautionary basis, people intend to secure themselves against future income losses. The lower income class has a remarkably higher propensity to consume than the upper class. Thus the observable shift of income distribution towards upper incomes consequently reduces consumption expenditures. Both effects produce a rise in the savings ratio. Additionally, the fall of wages behind productivity growth and the high taxes on labour and social insurance contributions put a strain on disposable incomes.

The export performance of Austria has been very good over the past few years, even when the economic crisis caused a heavy slump. Nevertheless exports could possibly become a bottleneck, if Austria cannot successfully gain grounds in remote and fast growing countries (BRICs, ASEAN). Unlike other countries such as Switzerland, Austria has not really expanded its export activities into overseas (i.e. non-European) countries, in particular the emerging economies. Only 1.6% of Austrian exports go to China, one of the fastest growing markets.

#### 4.1.3 Energy and environment

With the energy and climate "package" of 23 January 2008<sup>42</sup>, the EU defines ambitious long-term goals to ensure the security of the energy supply in Europe while at the same time reining in climate change. The challenge is to gear the energy system towards sustainable, low-carbon sources.

For Austria, the following targets for 2020 can be derived from the overall European framework:

- a reduction in greenhouse gases of 21 per cent in that part of the economy which is subject to the European Emission Trading System (ETS sector),
- a similar reduction of 16 per cent for the other (non-ETS) sectors, and
- a share of energy from renewable sources of 34 per cent of total final energy consumption.

The challenge consists in generating the necessary energy supply (e.g. for heating, lighting, mobility) with significantly lower primary energy input and lower emission intensity (CO<sub>2</sub> per energy unit). Achieving the target requires higher energy efficiency for user and transformation technologies as well as more a widespread use of renewable energy. The climate and environmental goals merit particular attention in order to ensure that any growth acceleration produced by the EU2020 strategy does not lead to increased emissions of greenhouse gases.

The major points for action or bottlenecks which currently hamper the achievement of energy goals are listed below. Each one considerably contributes to overall energy consumption and greenhouse gas emissions:

##### a) Buildings

The building sector plays a key role for Austria to achieve its energy and climate policy targets. Its share in greenhouse gas emissions of 16 per cent and in final energy consumption – private households account for 25 per cent - underlines this importance. Efforts to raise energy efficiency have so far been supported mainly by new construction. Yet, energy-saving investments into the existing stock of buildings offer a large potential for improvement, notably for single and double family homes which, according to the 2001 census of buildings

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<sup>42</sup> COM(2008) 30. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - 20 20 by 2020 - Europe's climate change opportunity.

and dwellings ("Gebäude- und Wohnungszählung") make up around 75 per cent of the total stock. A significant increase in the ratio of insulated buildings is indispensable if substantial energy savings and emission reductions are to be achieved.

#### b) Transport

Next to the manufacturing industry, the transport sector is the main generator of greenhouse gas emissions (GGE) in Austria, with a share of 25 per cent in GGEs and of 30 per cent of CO<sub>2</sub> emissions. The main reason is the heavy reliance on fossil fuels for transport services and mobility (be it their production or use). Around 36 per cent of final energy consumption in Austria is accounted for by the transport and agriculture sectors combined. Between 1990 and 2008, the GGE of the transport sector increased by 60 per cent. Conventional vehicles with combustion engines are particularly energy-inefficient. The swift increase notably in passenger transport deserves special consideration. Moreover, there is an overall need for a fundamental re-orientation of mobility services, ranging from avoiding redundant or "forced" mobility to the development of new mobility concepts based on flexible mobility services offered by the market.

#### c) Production

The manufacturing sector accounts for almost 30 per cent of final energy consumption in Austria and for about one-third of CO<sub>2</sub> emissions. Due to the change in the industrial structure and to measures taken in favour of higher energy efficiency, the share of industry in total energy consumption declined in the early 1990s, and energy efficiency (energy consumption per unit of output) improved. In the last decade, energy consumption headed upwards again, pointing to the need for further measures to reduce energy consumption and emissions. There is, moreover, a trend shift towards a higher consumption of electricity, while the share of renewable energy sources is rather small. There is a large potential for higher energy efficiency in those areas of manufacturing where there is a great need for heat. Such locations would naturally be predisposed for highly efficient industrial co-generation.

#### d) Energy generation

In the area of energy generation, decisions regarding the technology used to this end need to be taken. These decisions need to bear in mind how to raise the share of renewable energy sources, increase the implicit requirements for distribution networks and improve the efficiency of transformation technologies. Apart from the environmental effects, this would also increase independence from fossil energy commodities. As regards transformation technologies which generate electricity and heat from primary sources, the combined supply via highly efficient co-generation technologies is particularly relevant. In addition, new challenges arise from the increased use of renewable energy which has a fluctuating supply (e.g. wind), new producer/consumer structures (e.g. de-centralised energy production) and new demand segments (e.g. e-mobility). Besides the technological and systemic aspects, final demand is a key framework condition for energy supply, i.e. the amount of energy

services and the efficiency of the technologies used determine the requirements for energy supply and the necessary primary energy input.

e) Public expenditure on research for clean energy

Market studies anticipate strong advances in environmental technology and clean energy by 2020. Austria's growth potential will largely depend on research efforts in this area. According to the information available, public authorities in Austria spend very little on energy research which only accounted for 2 per cent of total public research expenditure in 2008. In comparable countries such as Finland, Denmark, Sweden, Switzerland etc., this share is substantially higher. Thus, energy research is a priority area for public support, which would also serve the EU 2020 goals in the area of energy and climate change.

#### 4.1.4 Education

The first headline target in the area of education is that 40 per cent of the younger generation should have completed higher education. The quality of the training and further education system and a well educated and trained population are very important prerequisites for economic success and for the competitiveness of an economy. They are also important factors in being able to carry out technical, social and organisational innovation. As income levels in an economy rise, human capital becomes ever more important for economic development. Training and further education are also crucial for participation in the labour market and the most effective way of reducing poverty. At the same time training and further education help to combat the demands of globalisation and an ageing population. They create the framework for people to react to technological change and to make use of globalisation. At the level of the individual, a higher level of training, which can be used in the labour market, brings with it a higher personal income and reduces the risk of unemployment, especially when one is older.

The way that Austria placed so much emphasis on secondary level vocational qualifications, which did successfully boost Austria's process of technological catch up, is now being slowly brought into question in light of technological developments which demand a higher level of formal qualification. A radical reform in the direction of general skills is not necessary, but slightly moving the emphasis to more tertiary job related and general skill qualifications could solve some growth bottle necks.

Bottlenecks which prevent the targets being achieved are essentially the low ratio of secondary education graduates with access to higher education (A-levels / "Matura", entrance exams) and high drop-out rates.

The first cause for a low participation in tertiary education is the relatively low number of young people who actually achieve the necessary grades/exams to be allowed to study (Matura). From those who do achieve this requirement almost all go on to start a degree. This low number of young people who achieve the necessary grades/exams is also linked to the strongly vocational bias of the Austrian education system, to the fact that moving between



particular types of education is somewhat difficult and to the fact that school children are separated according to ability at the age of ten. Some potential is already lost in the very early childhood years due to a lack of qualitative, high class comprehensively available day care for children, especially for children under the age of three. Deficits which already exist due to the level of education achieved by an individual can only be compensated for with great difficulty in the further education system. For this reason the primary/secondary education system and further education system cannot act completely independently of each other. What is increasingly needed is a co-operation between both systems with a coordinated and interlinked qualifications system, which begins at the pre-school level and follows on into primary education. It should provide a qualification base and should emphasize learning in further phases of education, work and life. In such a system the first degree attained prepares people to enter the labour force and lays down the foundations for further education.

The second cause for a low participation in tertiary education lies in the dropout rate of students from tertiary education. As a result of the introduction of Bologna this has fallen but is still influenced negatively by the poor supervision and insufficient preparation of students for academic studies (information, orientation).

The second headline target of the Europe 2020 strategy in the area of education is a drop-out rate of 10 per cent. The following arguments are taken from Steiner and Wagner (2007). According to a European definition, school drop-outs are young people between the ages of 18 to 24 who have only completed their compulsory education and who have left the education system. The German term of "Schulabbrecher" is therefore not identical with the English "early school leavers". Overall, the drop-out ratio amounts to some 10 per cent. The reasons for the premature termination of schooling may be manifold, ranging from education "fatigue", overburdening, unsettled family or living conditions, to parents' lack of interest in academic careers, insufficient basic literacy, poor knowledge of German, down to addiction to alcohol and drugs or delinquency. The risks may nevertheless be described on the basis of socio-demographic characteristics:

In Austria, children from poor education backgrounds (around 16.8 per cent) are five times more likely to drop out of the education system without any other qualifications from post-compulsory education as compared with children from educated families. The drop-out ratio of migrants, at 29.8 per cent, is four times higher, and that of migrants of the second and third generation, at 15.6 per cent, twice as high as that of Austrian-born children. If parents are unemployed, the risk for their children leaving the education system without any qualification from post-compulsory education is three times higher (at 21.3 per cent) than that of children whose parents have a job.

Current policy interventions in Austria hardly serve to prevent these problems, nor do they aim towards systemic reform. Labour market measures and compensating for known shortcomings should take priority over the mobilisation of the labour force potential.

The key requirements to reduce bottlenecks in the education system, namely reducing drop-out rates are therefore

- A stronger emphasis on prevention:
  - reform of basic education
    - availability and quality of childcare outside the family
    - pedagogy and didactics training for teachers in primary and secondary education
    - individual support for pupils instead of selection
    - school systems featuring autonomy, competition and evaluation
  - strengthening the professional orientation of schooling
  - a drop-out reporting system
- Since the profile of school drop-outs is rather heterogeneous, a differentiated approach is needed which includes readily accessible re-integration measures and a strategy for the co-ordination and co-operation of different stakeholders (there is currently an initiative by the Federal Ministries of Labour and Education to fight early educational drop-out).

#### 4.1.5 Poverty

The Commission has proposed that the number of persons threatened by poverty should be reduced by 20 million over the whole of Europe. In Austria, 12.6 per cent of the population, or around 1 million people, presently live in households whose income including social transfers is lower than 60 per cent of the median equivalent income (the poverty threshold as defined by European convention). Social transfers reduce the danger of poverty significantly, by up to 50 per cent. An egalitarian income distribution has a positive impact on the incentives to take up a job and on economic growth. Results from experimental economic research suggest that people define their personal wellbeing in relation to that of others. This means that an egalitarian distribution raises utility for most people and thereby contributes to social stability, which in turn brings positive effects on physical and human capital investment and on competitiveness.

Labour force participation is of crucial importance to avoid the risk of poverty. People who are not in gainful employment, or who are for too short a time, or are only marginally in gainful employment, be it that they are ill, handicapped, poorly qualified or obliged to take care of others, are often without sufficient financial means and thus threatened by poverty to a much larger extent. Migrants in particular, single parents and large families face a higher risk of poverty.

Key measures for reducing poverty risk and the economic bottleneck that this represents may be categorised into prevention or avoidance of poverty on the one hand, and corrective action on the other.

a) Poverty prevention

- A comprehensive and high-quality network of professional care facilities, in particular for children below 3 years of age (see above labour force participation)
- The reform of the tax and social security contribution system (reduction of non-wage labour cost, especially for low wages)
- The promotion of social mobility via the education system (to avoid "inheritance" of poverty)
- Introducing work permits for asylum seekers and improved recognition of migrants' qualifications

b) Fight against poverty

- The introduction of a means-tested basic income is one, albeit not perfect, way to fight poverty, inter alia via national minimum standards, closer integration of groups outside the labour market, the abolition of discriminatory elements for recipients of social assistance, such as earmarked health insurance vouchers or recourse claims.

## **4.2 Macroeconomic effects of meeting the research, tertiary education and employment goals**

### **Helmut Hofer (IHS), Serguei Kaniovski (WIFO)**

This chapter presents simulations of the macroeconomic effects of meeting the research, tertiary education and employment goals of EU 2020 using the A-LMM, a long-run macroeconomic model of Austria's economy. Following a brief description of the model we compare the cumulative effect of achieving the research, education and employment goals with a no-policy-change (baseline) scenario.

This simulation study focuses on the consequences of achieving the EU 2020 agenda goals by 2020. Despite 2020 being a natural horizon for the simulations, we extend the horizon to 2050 to capture the policy implications in the very long run. This is necessary since many supply-side and institutional policies in pursuit of the EU 2020 agenda will have a permanent effect on Austria's economy, and, moreover, the long term policies such as increasing the share of tertiary graduates are likely to achieve their full effect after 2020.

#### *4.2.1 The Austrian Long-run Macroeconomic Model (A-LMM)*

The Austrian Long-run Macroeconomic Model (A-LMM) is a long-run macroeconomic model of Austria's economy developed jointly by the Austrian Institute of Economic Research (WIFO) and the Institute for Advanced Studies (IHS). The model has been designed to analyse long-term issues, such as the consequences of population aging on employment, output growth, and the solvency of the social security system. The current projection horizon extends until

2070 on an annual basis. The model incorporates the current main variant of Statistics Austria's demographic projection<sup>43</sup>.

The long-run growth path is determined by supply side factors. Private agents' behavioural equations are derived from dynamic optimisation principles and assume perfect foresight. Firms produce goods and services using capital and labour as inputs. The output (value added) is modelled using a Cobb-Douglas production function. The technical progress is exogenous. Factor demand is derived under the assumption of profit maximisation subject to resource constraints and the production technology. Capital accumulation is based on a modified neoclassical investment function with forward looking properties. In particular, the rate of investment depends on the ratio of the market value of additional investment goods to their replacement costs. This ratio (Tobin's Q) is influenced by expected future profits net of business taxes. Labour demand is derived directly from the first order condition of the firms' profit maximisation problem.

Private households' behaviour is derived from intertemporal utility maximisation under an intertemporal budget constraint. Within this set-up, consumption and savings (financial wealth accumulation) decisions are forward-looking. Consumption depends on discounted expected future disposable income (human wealth) and financial wealth but also on current disposable income as liquidity constraints are binding for some households.

To afford consumption goods, households supply their labour and receive income in return. A special feature of A-LMM is its focus on disaggregated labour supply. In general, the labour force can be represented as a product of the size of population and the labour market participation rate. The model contains participation rates by sex and age cohorts (22 groups). We thus account for potentially different behaviour of males and females (part-time work) and young and elderly employees (early retirement).

We assume a constant legal and institutional framework. A-LMM includes a disaggregated model of the social security system as part of the public sector. We model the expenditure and revenue side for the pension, health and accident and unemployment insurance, as well as expenditure on long term care. Demographic developments are important explanatory variables in the social security model. Although parts of the public sector may run permanent deficits, for the public sector as a whole, the long-run balanced-budget condition is imposed. The general government is assumed to fulfil the balanced budget requirement of the Stability and Growth Pact.

A-LMM as a long run model is supply side driven. The demand side adjusts in each period to secure equilibrium in the goods market. The adjustment mechanism runs via disequilibria in the trade balance. The labour market equilibrium is characterised by a time varying natural rate of unemployment. Prices and financial markets are not modelled explicitly; rather we

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<sup>43</sup> The first version of the A-LMM was developed in 2004 (*Baumgartner et al.*, 2004). The model has been updated in 2007 (*Hofer et al.*, 2007). The current version of the model is based on the European System of National Accounts (ESA95) and other administrative data until 2009 (*Hofer et al.*, 2010).

view Austria as a small open economy. Consequently, the real interest and inflation rates coincide with their foreign counterparts. We impose the condition that domestic excess savings correspond to the income balance in the current account.

These features of A-LMM ensure that its long-run behaviour follows the standard neoclassical growth theory and is consistent with Kaldor's facts (Solow, 2000). That is, the model attains a steady state growth path determined by exogenous growth rates of the labour force and technical progress.

Because of the long projection horizon and a comparatively short record of sensible economic data for Austria, the parameterisation of the model draws extensively on economic theory. This shifts the focus towards theoretical foundations, economic plausibility, and long-run stability conditions and away from statistical inference. As a consequence, many model parameters are either calibrated or estimated under theory based constraints. Further details on the specification of the model can be found in Baumgartner *et al.*, 2004 and Hofer *et al.*, 2007 and 2010.

#### 4.2.2 Baseline scenario

In the following we discuss the baseline of the model against which the cumulative effect of achieving the research, education and employment goals will be compared. In most cases the quantitative effect of the policies are expressed as percentage deviations from the baseline<sup>44</sup>.

The recent global financial and economic crisis resulted in a severe economic recession in Austria, resulting in a decline of real GDP by 3.9 percent in 2009. This development presents a substantial deviation from the long-run growth path of the economy. The recent short-term economic forecasts for Austria project an imminent economic recovery, with growth rates of real GDP approaching their long-run average of 2 percent p.a. in 2010<sup>45</sup>. We therefore assume no permanent negative effect from the recent recession on the growth of potential output. We assume a constant rate of growth in total factor productivity of 0.85 percent per year. This growth in total factor productivity implies, under the assumption of a Cobb-Douglas production function with a labour coefficient equal to 0.5, a labour productivity growth of 1.7 percent p.a.

The baseline scenario incorporates the main variant of the population forecast for Austria (Hanika – Klotz – Marik-Lebeck, 2009)<sup>46</sup>. Austria's population is projected to exceed nine million in 2030 and to increase by a further half a million by 2050. This increase will be

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<sup>44</sup> The baseline coincides with that in Hofer *et al.* (2010).

<sup>45</sup> See IHS (2010); WIFO (2010).

<sup>46</sup> The population forecast by Statistics Austria extends to 2070 and is exogenous to the model. Since the model is intended for projections up to 2070, the population forecast horizon is too short for computing the forward looking part of A-LMM. Therefore, we use an extended population forecast going up to 2150 by assuming constant fertility and mortality rates. The extension is provided by Statistics Austria and enables us to obtain a forward looking solution until 2070. Forward looking terms appear in private consumption and investment functions.

accompanied by a dramatic shift in the age structure from younger to older age cohorts. The ratio of persons aged 65 and older relative to persons aged 15 to 64 (the old age dependency ratio) will rise from 26.0 percent in 2009 to 75.9 percent in 2050. The economically active population will increase from 4.1 million people in 2010 to 4.2 million people in 2050. It is important to emphasize that A-LMM uses administrative labour market data. We make all the adjustments necessary to ensure we can make comparisons with data from the Labour Force Survey, which is relevant for the employment goal.

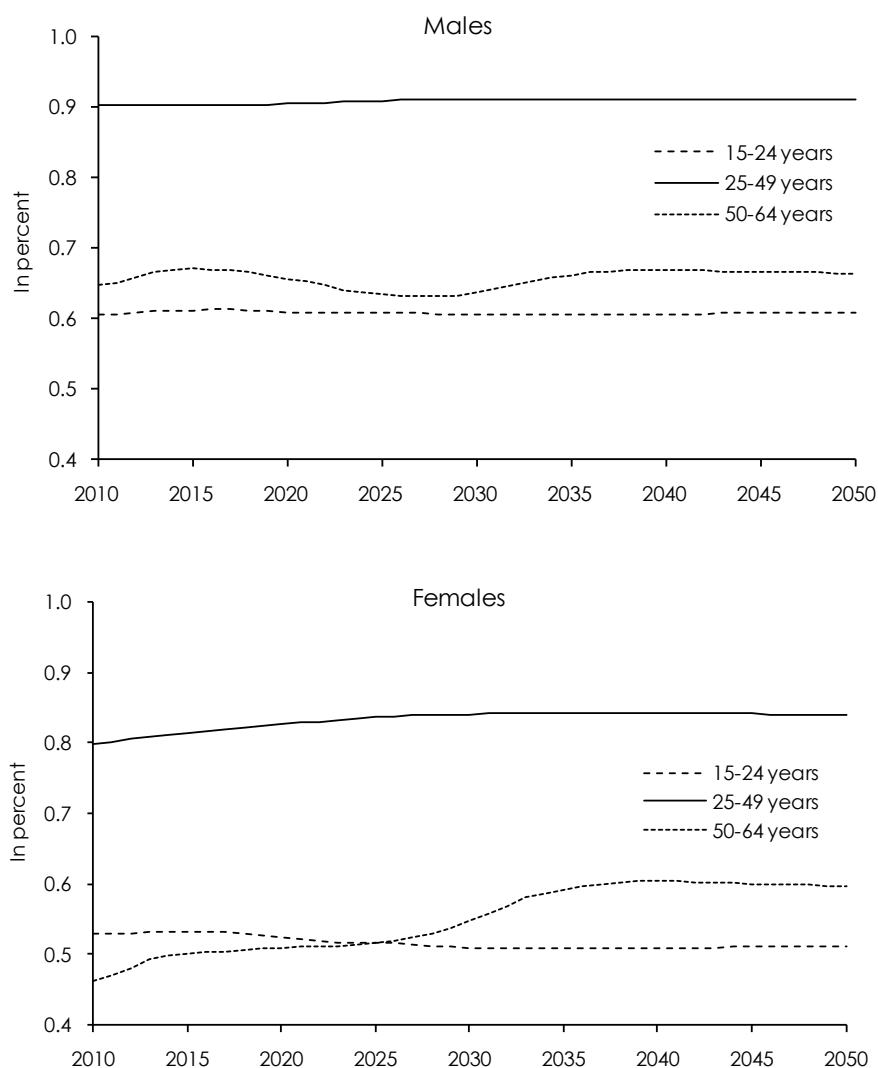
To counter growing pension expenditure, the government implemented measures to increase the actual retirement age and to curb the growth of pension expenditure. The pension reform in 2000 gradually extended the age limit for early retirement due to long-time insurance coverage to 56.5 years for women and 61.5 years for men. The 2003 pension reform gradually abolishes the possibility of early retirement due to the retiree having paid insurance contributions over a long period. Starting from the second half of 2004, the early retirement age will be raised by one month every quarter. The pension reform 2004/05 introduced quasi-pension accounts and harmonized pension schemes for different groups of employees under 50 (private sector employees, public sector employees, the self-employed and farmers), with a gradual phasing-in of the new scheme. However, this reform reintroduced the possibility of receiving a reduced pension starting from the age of 62 instead of 65 ("corridor pension"). Furthermore, it is still possible to retire at the age of 60 for people who have made insurance payments over a long period of time. Recently, the reduction rates in the pension for each year of early retirement have been reduced.

The general trend towards a higher participation coupled with the incentives set forth by the pension reforms will lead to an increase in the total participation rate from 71.7 percent in 2009 to 72.7 percent in 2020 (75.9 percent in 2050). Participation rates of the young, middle-aged, and elderly in the baseline scenario are shown in Figure 41. The aggregate participation rates rise mainly due to a gradual increase in the participation of women.

The annual employment growth of 0.1 percent in combination with the real wage growth of 1.6 percent results in an annual growth rate in real GDP of 1.7 percent. It is assumed that the substantial increase in unemployment during the economic crisis will result in permanently higher unemployment rates in Austria due to hysteresis effects. The unemployment rate will reach 7.0 percent by 2020, and afterwards slowly return to its long-term equilibrium value of 6.2 percent.

Recent inflation rates showed high volatility. After reaching 4 percent in the summer of 2008 they immediately and rapidly declined, turning negative by summer 2009. In the meantime inflation has stabilized. The baseline scenario foresees no fundamental change in the long-term perspectives for consumer price inflation. Price increases are assumed to develop in accordance with the target set at 2 percent by the European Central Bank.

Figure 41: Participation Rate 2010 to 2050



#### 4.2.3 Increasing the spending on R&D

The growth rate of total factor productivity is a key determinant of the average growth rate of an economy. The endogenous growth theory singles out research and development (R&D) as the main determinant of the growth of total factor productivity in the long run (Acemoglu, 2008).

The baseline scenario assumes a constant GDP share of R&D spending of 2.76 percent, while total factor productivity grows at an annual rate of 0.85 percent. On a balanced growth path, where employment and the capital output ratio remain constant, labour productivity growth equals the growth rate of total factor productivity divided by the labour share. Thus,

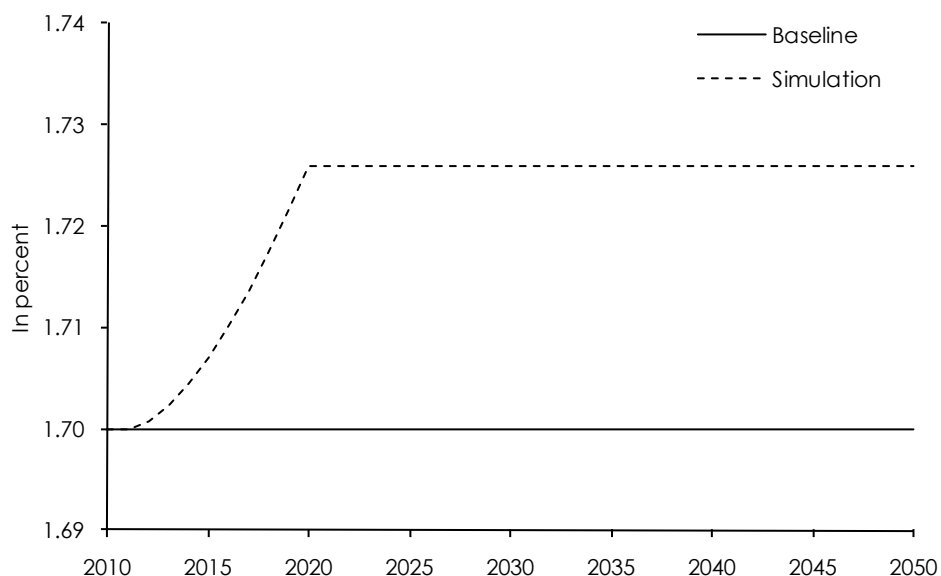
the assumption of constant employment growth, a constant capital-output ratio and a labour share of 0.5 implies an annual rate of GDP growth of 1.7 percent.

The implementation of the EU 2020 agenda in Austria envisages a gradual increase in spending on research and development from 2.76 percent of nominal GDP in 2010 to 3.76 percent in 2020. Increasing the R&D share by 1 percentage point would require 4.2 billion Euros additional R&D spending by 2020. In our scenario we assume that the share remains at 3.76 percent after 2020.

We quantify the effect of higher R&D spending on total factor productivity using empirical estimates of the elasticity of total factor productivity to the R&D spending ratio. A large body of empirical literature puts the effect of a 1 percent increase in R&D capital on GDP in the range of 0.13 to 0.14 percent (*Griliches, 1995; Wieser, 2005*). This elasticity emerges as an average of a large number of empirical studies at both the firm level and the country level. In a panel-econometric study for Austria, *Falk – Hake (2008)* obtain 0.16 as the elasticity of total factor productivity with respect to an increase in R&D personnel. Since wages and salaries make up the largest share of research spending, we use this elasticity as a proxy for the elasticity of total factor productivity with respect to the R&D spending ratio.

The effect of a gradual increase in the share of R&D spending – i.e., of the R&D ratio - by 1 percentage point from 2010 to 2020 on the growth of labour productivity is shown in Figure 42. The growth rate of total factor productivity increases from 0.85 percent to 0.86 percent, or, equivalently, the growth rate of labour productivity increases by 0.03 percentage points from 1.70 to 1.73.

Figure 42: Labour productivity





#### 4.2.4 Increasing the share of tertiary education in the labour force

The quality of educational attainment is the key factor in the formation of human capital. On a macroeconomic level, more and high quality human capital leads to higher labour productivity, higher economic growth and ultimately improves competitiveness in a globalized world. For the individual, high educational attainment leads, on average, to higher personal income and a lower risk of unemployment.

The primary source of data on educational attainment in Austria is the Labour Force Survey. The categorization of educational attainment in Austria is based on the ISCED (International Standard Classification of Education) by UNESCO. The key quantity is the highest educational degree attained by a person. For simplicity, we summarize the different types of educational attainment in three categories: low (ISCED 0-2), medium (ISCED 3-4), and high (ISCED 5-6). The first category includes the primary school, lower secondary school and the lower cycle of the secondary academic schooling (AHS-Unterstufe). The medium category includes the upper cycle of the secondary academic schooling (AHS-Oberstufe), vocational educational and training programs, and apprenticeship training. The third category of tertiary education includes degrees from universities and universities of applied sciences (Fachhochschule) as well as degrees from post-secondary vocational educational and training colleges.

The implementation of the EU 2020 agenda for Austria foresees an increase in the share of the population aged 30-34 having completed tertiary education from 34.5 percent to 38 percent by 2020. Starting from the three types educational attainments, we assume that the tertiary education target will be met with an (permanent) increase in the share of tertiary education of 1.5 percentage points by 2020. This is accompanied by a decrease in the share of low and medium types of academic achievement of 0.5 percentage points and 1.0 percentage point respectively. In 2020 only people younger than 35 benefit from these improvements in education. The share of highly skilled workers increases in all age groups in the long run.

We quantify the effect of education on labour productivity using a Mincer type earnings equation. As is common in the literature, we use wage income as a proxy for productivity. The Mincer equation estimates the rate of return of education/training (Mincer, 1974). Estimates for Austria based on micro data from Statistics on Income and Living Conditions (SILC) show that, on average, a medium skilled and a high skilled worker receive a wage premium of 41 percent and 110 percent, respectively. The effect of education on earnings is higher for women than for men. Using these estimates, we construct an aggregate productivity index, which takes into account the age structure of the population. Furthermore, labour market attachment is higher for skilled labour than for unskilled labour. We use data from the Labour Force Survey to calculate the differences in employment rates across skill levels for every age cohort. In the simulation these estimates are included to consider the effects of education/training (skill upgrading) on labour market participation and employment.

One consequence of having more people in education coupled with longer periods of study, is lower labour market participation in the relevant age cohorts. We expect the participation

rates of people aged between 15 and 34 to decrease by 0.05 percentage points by 2020. The long-term effect of higher education on participation rates is positive and approaches 0.1 percentage points by 2050. The dividends to be reaped from a better education system are long-term.

#### 4.2.5 Increasing the employment rate

In the baseline simulation the employment rate is close to 75 percent in 2020<sup>47</sup>. Meeting the research and education goals would not raise the employment rate to 78 percent by 2020. Therefore labour market policy measures aimed at reducing the structural unemployment and further increasing the participation rate are necessary.

In our simulations we assume that the desired increase in the employment rate will be brought about by gradually increasing the participation rate of men by 2 percent and women by 4 percent by 2020. At the same time the structural unemployment rate will be reduced by 0.5 percentage points by 2020 and 0.6 percentage points in the long term. Accommodating a higher labour supply will exert a downward drag on real wages. In the period from 2010 to 2020 the growth of real per capita wages will be 0.08 percentage points lower than the baseline.

We assume that policies aimed at increasing labour market participation and lowering structural unemployment will have a permanent effect, in particular on the employment rate that will be approaching 82 percent in 2050. The increase is caused mainly by higher labour market participation (increase in the retirement age of women).

#### 4.2.6 Simulation results

Table 25 summarizes the cumulative macroeconomic effect of achieving the R&D, education and employment targets of the EU 2020 Strategy. Figure 43 shows that between 2010 and 2020, the growth of real GDP will, on average, be 0.3 percentage points higher, with a positive growth differential of about 0.1 percentage points persisting beyond 2020. Turning to the level of real GDP in Table 25, we see that in 2020 the real GDP is 2.92 percent higher than in the no-policy-change (baseline) scenario, and that this difference will rise to 5.23 percent by 2050.

Higher economic growth is the result of higher labour productivity due to more R&D and better education and more favourable labour market conditions. In 2020, the participation rate is 2 percentage points above the baseline (

Figure 44). The rate of structural unemployment is 0.6 percentage points lower in the long run (Figure 43). The dynamics of the employment rate and the policy goal are shown in Figure 46. The increase in the employment rate and the decrease in the rate of structural

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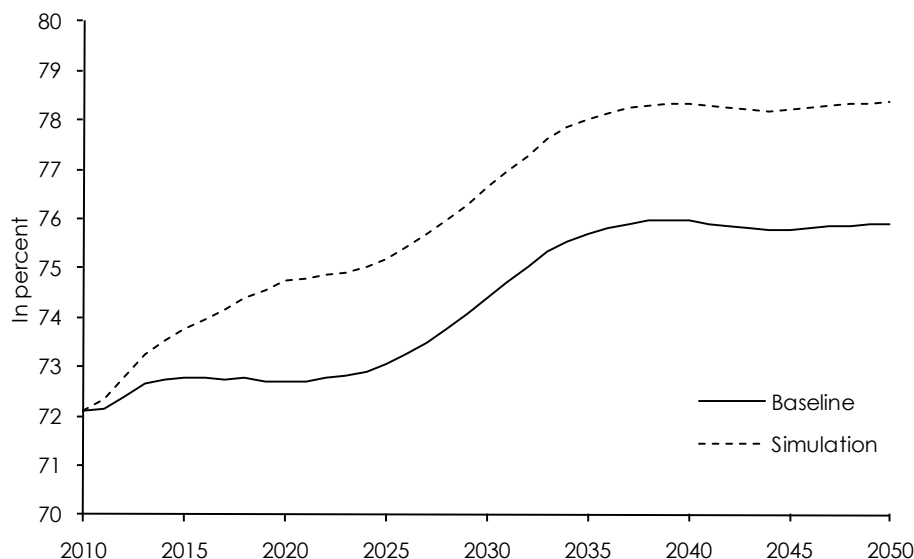
<sup>47</sup> As already mentioned, A-LMM is based on administrative labour market data. We use the level of the employment rate according to the Labour Force Survey in 2009 and assume that the relevant employment rate grows with the same rate as the employment rate based on administrative data.

unemployment have the highest impact on the growth rate of real GDP in the short and medium term. The positive development of labour supply, accompanied by modest wage growth, leads to an increase in labour demand. The increase in the employment rate of 2.6 percent reflects the slower dynamics of real wages. Due to the strong increase in employment, the compensation of employees increases by 2.6 percent.

Figure 43: Growth rate of real GDP



Figure 44: Participation rate



The simulations show that achieving the R&D, education, and employment goals would yield considerable positive economic effects, especially in the long run. The right column of Table 25 shows the long-run consequences of meeting the EU 2020 agenda goals. The growth of real GDP stays above the baseline and the increase in output accumulates to 5.23 percent. Participation and employment are significantly above the baseline solution. Following an initial slow-down in wage dynamics, the real wage per employee is 1.1 percent higher than in the baseline by 2050.

Figure 45: Unemployment rate

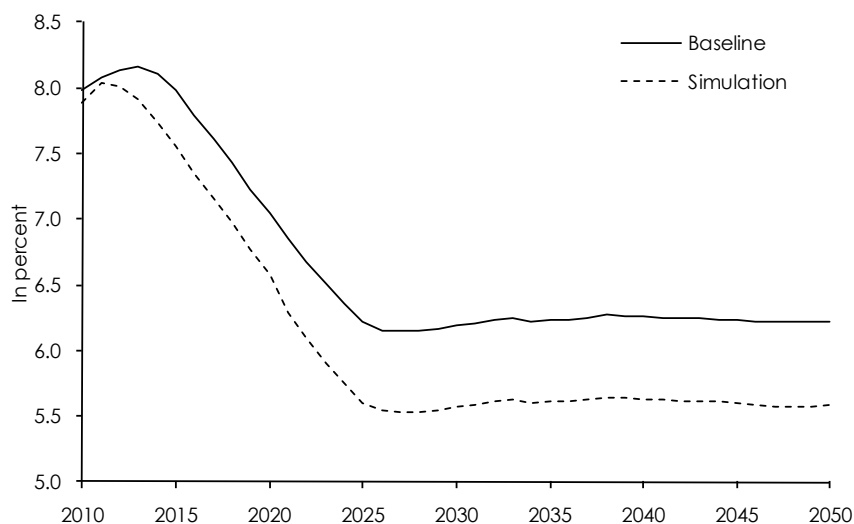


Figure 46: Employment rate

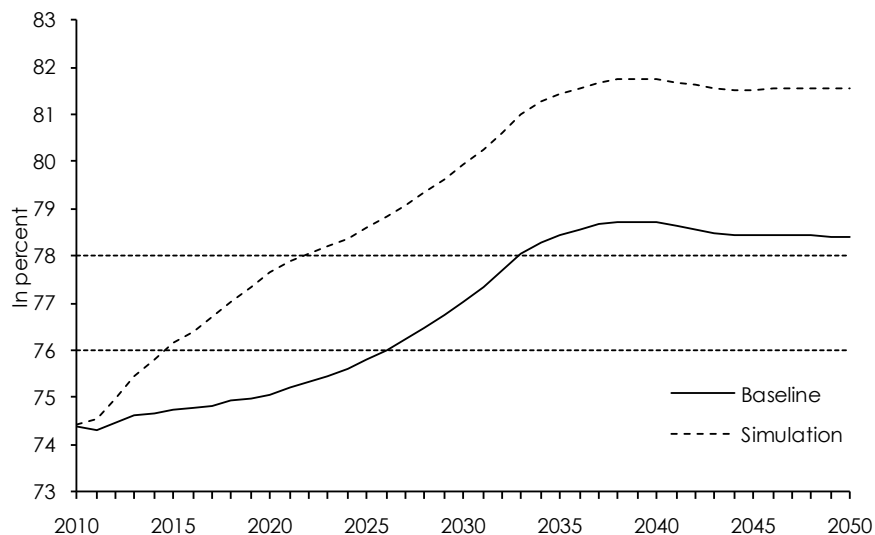


Table 25: The macroeconomic effect of achieving the R&D, education and employment targets for Austria

	2010	2020	2050
	Deviation from baseline in percentage points		
Participation rate, total	0.00	2.06	2.47
Women	0.00	2.63	3.13
Men	0.00	1.49	1.81
Employment rate	0.07	2.59	3.14
Unemployment rate	-0.10	-0.46	-0.64
	Deviation from baseline in percent		
Gross domestic product, volume	0.14	2.92	5.23

### 4.3 Expected effects of meeting the EU2020-climate goals

#### Daniela Kletzan-Slamanig (WIFO)

Ex-ante evaluation: environment & climate policy

The EU's climate and energy package of 23 January 2008<sup>48</sup> determines the framework and overall objectives regarding the mitigation of climate change and the transformation of energy systems in order to reduce energy demand and provide a secure and increasingly sustainable energy supply. The EU "20-20-20" targets comprise of:

- a reduction in EU greenhouse gas emissions of at least 20% from the levels in 1990;
- 20% of EU energy consumption to come from renewable resources;
- a 20% reduction in primary energy use compared with projected levels, to be achieved by improving energy efficiency.

In addition, the EU has announced that it will tighten the emission reduction target to 30% below 1990 levels if a comprehensive global agreement is reached for post 2012 climate policy and other industrialized countries commit themselves to similar emission reduction efforts.

For Austria, the EU 20-20-20 targets translate into:

- a reduction of greenhouse gases by 21% in that part of the economy which is subject to the European Emission Trading Scheme (ETS sector),

<sup>48</sup> COM(2008) 30. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - 20 20 by 2020 - Europe's climate change opportunity.

- a similar reduction of 16% for the other (non-ETS) sectors, and
- a share of energy from renewable sources of 34% of total final energy consumption.

Compliance with these targets requires a significant improvement in energy and emission efficiencies throughout all areas of final energy demand and energy generation as well as an increased use of renewable energy sources.

Austria has developed an Energy Strategy containing proposals for measures to be taken in all areas of the economy. The Energy Strategy constitutes the basis for the development of a consistent and comprehensive energy and climate policy concept to achieve the EU 2020 goals while simultaneously ensuring social fairness as well as economic competitiveness. This strategy furthermore defines the target of 1.100 PJ for final energy demand in 2020. This corresponds to a stabilization of energy demand to its 2005 level. In July 2010 the National Renewable Energy Action Plan<sup>49</sup> was reported to Brussels. This document is based on the Energy Strategy and describes Austria's plan between now and 2020 to reach the 34% target for renewable energy.

However, so far the energy and climate policy concept has not been defined. Various combinations of instruments and measures can be applied to incentivize or to impose the changes in technologies, behaviour, consumption and production patterns required.

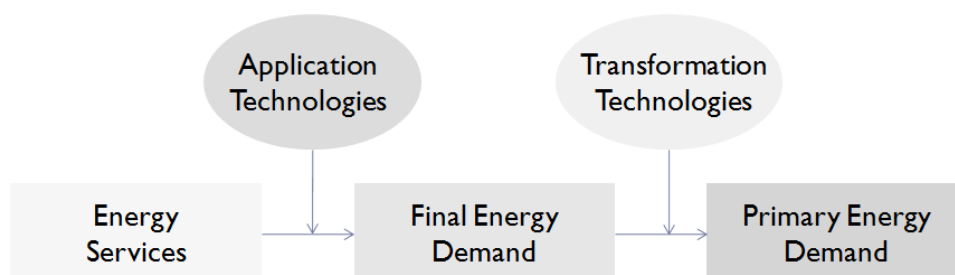
Policies can target all steps of the energy system (see Figure 47). Energy services should be the starting point, i.e. the benefit generated by the use of energy (e.g. comfortable room temperature, person kilometres travelled, etc.). Energy services can be reduced by behavioural changes, or improved regulatory or framework conditions (e.g. improved spatial planning). At the next level the remaining energy services could actually be produced by improved application technologies (energy efficient technologies) thus further reducing energy demand. Finally, electricity and heat can be produced by applying more efficient transformation technologies or by using renewable energy sources. This subsequently reduces primary energy use and/or emissions.

Thus, the economic effects related to reaching a certain target in terms of energy use or emissions crucially depend on the choice of policy instruments and measures. In this context it is important to distinguish between two types of economic effects. The first is the one-time investment effect, i.e. the impact on output and employment associated with (additional) investments in environmentally superior technological alternatives. Such investment can take place across all areas of the energy system ranging from improvements to the thermal quality of the existing building stock, the construction of passive houses when new houses are built, to environmental technologies in industrial processes, electricity and heat generation based on renewable energy sources or infrastructure investments for public transport.

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<sup>49</sup> See Kettner *et al.*, (2010).

Figure 47: Structure of the energy system



Source: Strategies for the Transition to Low Energy and Low Emission Structures <http://energytransition.wifo.ac.at/>

The second effect to be considered is the operating effect. This refers on the one hand to output and employment effects related e.g. to the operation of plants using renewable energy sources. On the other hand it relates to the budgetary effects which can also play an important role in the context of renewable energy and energy efficiency. Reductions in the demand for (fossil) energy and the ensuing reduction in costs for households increases e.g. the share of disposable household income that can be used for other purposes. The same holds true for firms and public authorities. In addition, the impact of such shifts in the energy system on tax revenues would have to be taken into account. On the one hand the revenues from energy taxes could decline if energy efficiency and the use of renewable energy sources are increased. On the other hand the revenues could rise if tax rates are raised, new environmental taxes are introduced or other economic instruments are applied (e.g. emission trading with auctioning).

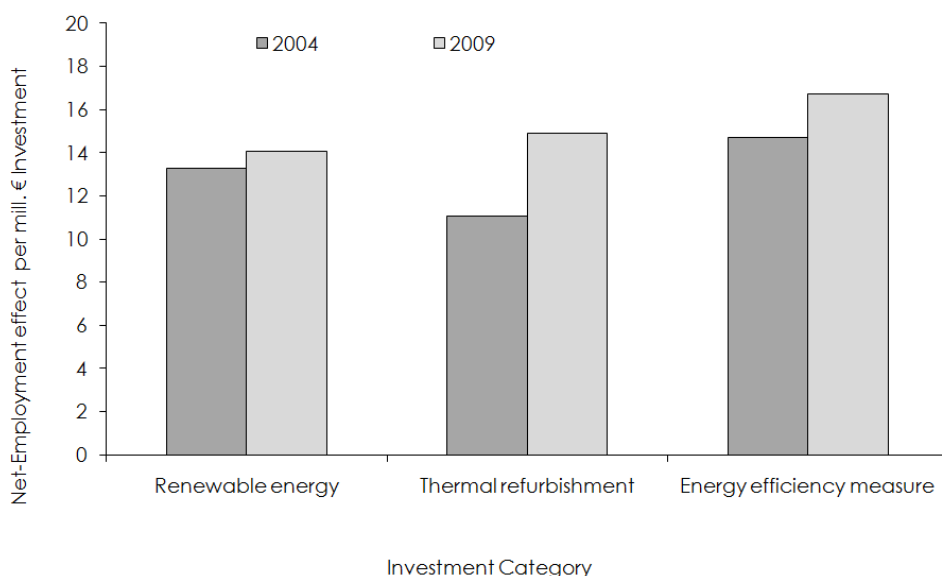
While the investment effect is limited to the period of producing the respective goods and services (e.g. the realisation of a thermal refurbishment of a building), the operating effect is permanent throughout the service life of a technology.

The assessment of the economic effects of reaching the 2020 objectives in Austria is constrained for several reasons. Although the overall framework has been determined and proposals have been developed the combination of instruments and measures has not been decided on yet and thus the costs cannot be estimated. Furthermore, the effects of the third phase of the EU emission trading scheme are still uncertain. This relates to the incentives for firms to carry out domestic measures as well as the revenues from auctioning emission allowances and their use. Other relevant framework conditions are future economic growth, the development of energy prices and the results regarding global climate policy architecture after 2012.

Using the results from various studies that focused on the economic effects of certain instruments in environmental policy (Kletzan – Steininger – Hochwald, 2006; Kletzan-Slamanig – Steininger, 2010) the range of potential employment impacts from future investments can be illustrated. The technological categories assessed are thermal refurbishment of buildings, energy efficiency measures in the business sector and the generation of heat and electricity

using renewable energy sources. The analyses were carried out for the projects funded by the Austrian Environmental Support Scheme (Umweltförderung im Inland) in the years 2004 and 2009. While 2004 was a year of average economic activity 2009 was characterized by the economic crisis. Thus, these two years can be used for defining the upper and lower bounds for employment effects related to environmental investments (see Figure 48).

Figure 48: Employment effects of investments in climate related measures



Source: Kletzan – Steininger – Hochwald, 2006; Kletzan-Slamanić – Steininger, 2010.

Per million Euro of investment in thermal refurbishment between 11 and 14 people will be employed in the investment phase. When implementing energy efficiency measures in the business or manufacturing sectors the effects rise to 14 to 16 people employed per million Euro of investment. For energy generation the investment effect amounts to 13 to 14 people employed. These transitory employment effects are related to the one-time investment impulse in a certain area, i.e. the demand for specific goods and services to the amount of one million Euros.

However, as mentioned above in the context of energy efficiency and renewable energy in addition to the investment effects the impact on the operating phase would also have to be taken into account. Especially for energy generation technologies based on biomass the operating effects over their service life can significantly exceed the investment effects.



## **4.4 Expected effects of meeting the EU2020-poverty goals**

**Ulrich Schuh (IHS)**

### **Reducing Poverty and Social Inclusion**

#### *Introduction*

The European Council in June 2010 has set the ambitious target to reduce the number of persons at risk of poverty and social exclusion within the European Union by 20 Million persons. Austria has a relatively favourable starting position in this respect. In Austria currently 1.5 Million persons, or 18.6 % of total population have been identified as being at risk of social exclusion. The relative share of population at risk of social exclusion is thus 6 percentage points below the average of EU-27.

The Austrian government has set itself the ambitious target to reduce the risk of poverty and social exclusion by 235,000 persons or 15 percent of its current level. The Austrian government will put emphasis on measures to increase employment and activity at the labour market. A special focus will be on persons with low labour market activity and on the improvement of the quality of jobs. Incentives for labour market activity shall be designed in a careful way in order to optimize employment opportunities. Policies to achieve the Austrian target shall be oriented towards specific socio-economic groups.

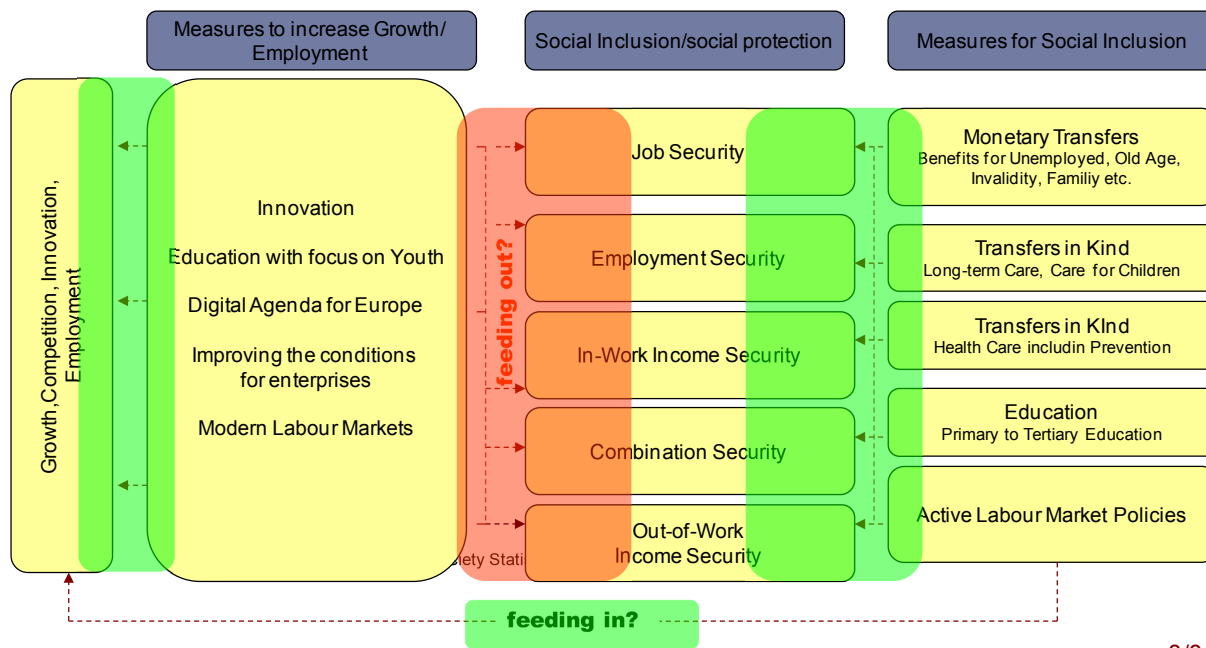
#### *The European Platform against Poverty*

With the strategy Europe 2020 for the first time an explicit target to reduce the risk of poverty and social exclusion has been included into the political agenda of the European Union policy strategy. The aim behind this new approach is to ensure economic, social and territorial cohesion.

The Lisbon Strategy for Employment and Growth was based on the implicit assumption that measures to increase employment and growth will by itself contribute to social cohesion and inclusion. This assumed causal relationship between growth and the risk of social exclusion is labelled as "Feeding-Out" in the literature. On the other hand it has been assumed that certain measures that increase social cohesion may have beneficial effects on employment and growth in the Member States. This mechanism is known as "Feeding-In".

In recent years, however, two separate political instruments have been developed on the level of the European Union. On the one hand the Lisbon Strategy focused on macroeconomic, microeconomic and labour market policies to increase the growth potential of the European economies and labour markets. On the other hand the Member States cooperated within the Open Method of Coordination for Social Protection and Social Inclusion to exchange experiences and best practices within the field of social cohesion.

Figure 49: Feeding In and Feeding Out



8/8

Source: IHS, based on Felderer et al. (2009).

Although it has been widely accepted that an interaction between social cohesion and growth and employment does exist the two political processes have been developed in parallel at the European level.

It may be regarded as an important step forward that within the Strategy Europe 2020 these two instruments have now been integrated into a comprehensive political approach for the coming decade.

Within the new strategy the Commission will work on the transformation of the Open Method of Coordination on social exclusion and social protection into a "Platform for Cooperation, peer-review and exchange of good practice". It is intended to foster the commitment by public and private institutions to reduce social exclusion. Peer pressure shall contribute to concrete actions that have to be taken to make progress in this field.

It is intended to design and implement programmes to promote social innovation for the most vulnerable. In this respect special emphasis will be given on education, training and employment opportunities for population groups at risk of deprivation and to fight discrimination. The Commission indicated that a new agenda shall be developed in order to enable migrants to take full advantage of their potential.

The Commission also committed itself to undertake an assessment of the adequacy and sustainability of social protection.

Within the European Platform the Member States will be invited to promote responsibility to combat poverty and social exclusion and to define and implement measures that address

the needs of groups at particular risk. Social Security Systems in the Member States will have to be optimized to reach the targets agreed at the European level.

At the European Council in June 2010 the Member States agreed to reduce the absolute number of European Citizens that are at risk of poverty and social exclusion by 20 Million. Member States also agreed on three indicators to define the groups that are at risk of poverty and social exclusion. These indicators are:

- the risk of poverty defined via disposable income at the households level
- deprivation defined via a list of items that households should be able to afford
- lack of integration into the labour market defined via the employment activity of households

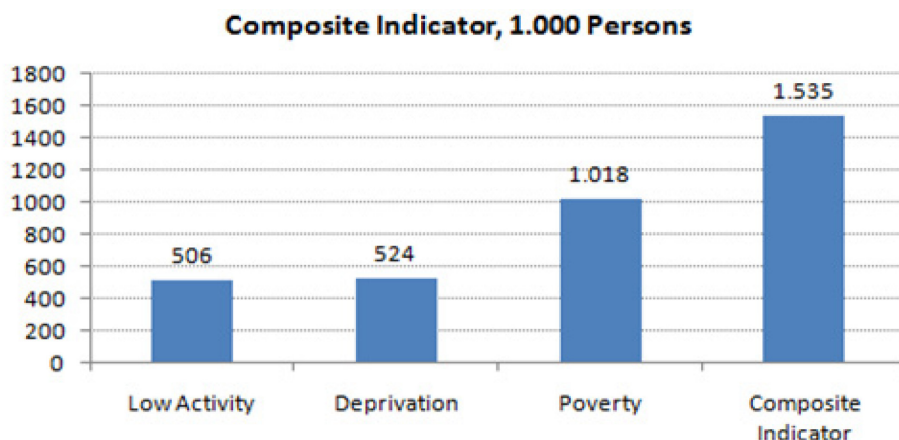
The three indicators described are consolidated in a "composite" indicator that captures the risk of poverty and social exclusion at the level of Member States and for the European Union as a whole. Currently 120 Million persons are affected by the risk of poverty and social exclusion according to this composite indicator. This number corresponds to 24.5 % of the total population of the European Union.

#### *The Situation in Austria and the Austrian Strategy*

In the field of social inclusion Austria starts from a rather favourable position. Austria belongs to the Member States with the highest economic welfare as measured by GDP per capita. It also has a long tradition of social policies and the welfare state is well developed. Using the respective indicator 1.5 million persons are affected by the risk of poverty and social exclusion in Austria. About 1 million Austrians are at risk of poverty. Deprivation and low employment activity are identified by 0.5 million persons in Austria respectively. This implies that 18.6 % of the total population are concerned by at least one of the three indicators pointing to social exclusion.

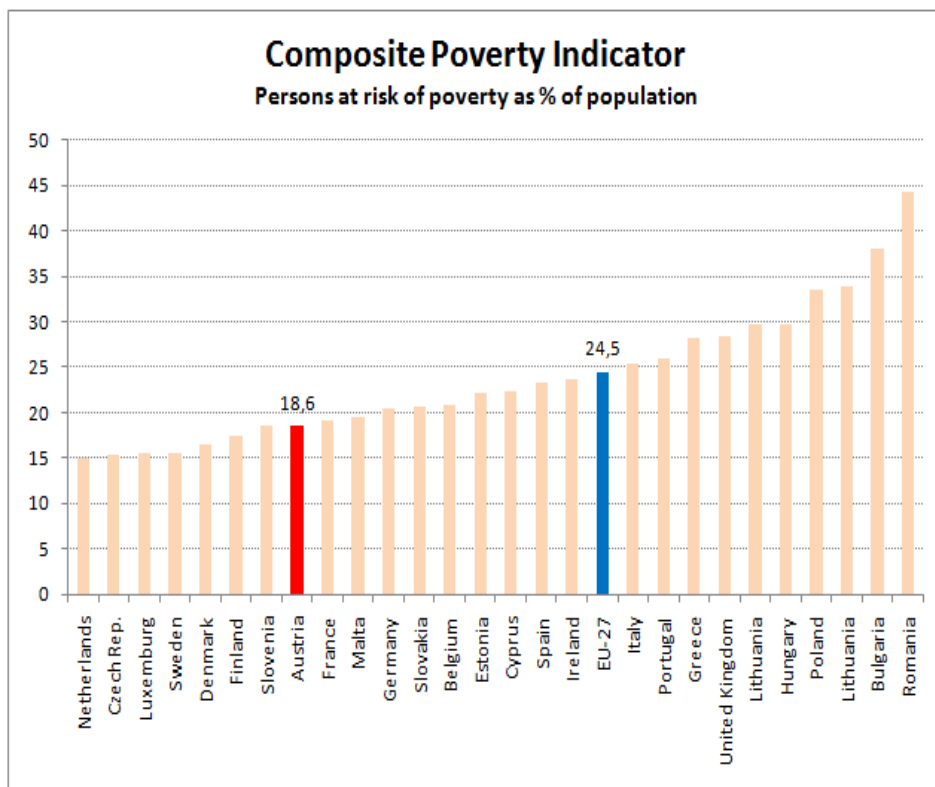
Comparing the figures of Austria with the other member states of the European Union confirms the relatively positive starting position of Austria. According to the most recent available figures of 2008 ranks at position 8 within the EU-member States with respect to the composite indicator agreed upon. The risk of poverty and social exclusion is 6 percentage points below the average level of EU-27. It has to be noted, however, that compared to the year 2005 the indicator increased by nearly 2 percentage points. This is in contrast to the development in most other EU-Member States where a decline in the relative risk of poverty and social exclusion has been observed. The increase in the Austrian composite indicator is mainly due to the measured sharp rise in the relative risk of deprivation within Austrian households.

Figure 50: At Risk of Poverty and Social Exclusion in Austria



Source: Eurostat.

Figure 51: Risks of poverty and social exclusion at EU level, 2008



Source: Eurostat

The Austrian government has committed itself to take measures to reduce the absolute number of persons at risk of poverty and social exclusion by 235.000. This implies a reduction of persons affected by 15%. In accordance with the European Strategy the Austrian

government stressed the close link between social exclusion and integration in the labour market. Consequently the Austrian government emphasizes measures to increase employment and activity at the labour market. A special focus will be on persons with low labour market activity and on the improvement of the quality of jobs. Incentives for labour market activity shall be designed in a careful way in order to optimize employment opportunities. Policies to achieve the Austrian target shall be oriented towards specific socio-economic groups:

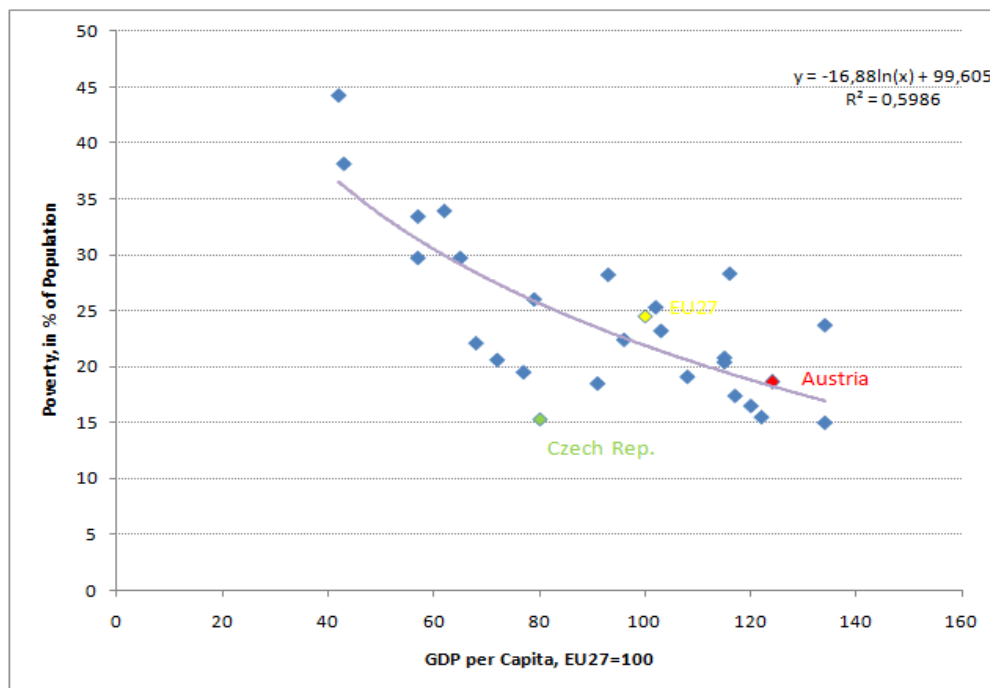
- Persons re-entering the labour market
- Long-term unemployed
- Youth
- Children
- Households with high levels of debt
- Non-employed
- Older persons

The focus of the policy strategy thus reflects specific problem areas that are behind the measured risk of social exclusion in Austria. It is oriented towards a stronger inclusion of certain segments of the Austrian population into the labour market.

#### *The Prospects for the Austrian Strategy and Feeding-Out*

The Austrian government has set itself a rather ambitious goal for the reduction of the risk of poverty and social exclusion. The Europe 2020 strategy as well as the Austrian government makes explicit reference to the close interaction of measures to enhance economic growth on the one hand and policies that reduce the risk of social exclusion on the other hand. In fact empirical evidence gives support for the hypothesis that there exists a significant relation between GDP per capita and the risk of poverty among the EU-Member States. As can be seen in Figure 52 there is a clear tendency that higher economic welfare goes hand in hand with lower risk of poverty in the Member States. In this respect Austria very closely corresponds to the average relationship calculated for the individual countries. It has to be noted, however, that there do exist clear deviations from this "average" relation. Member States below the regression line may be interpreted as countries which are very successful in fighting poverty. In Figure 53 the Czech Republic is marked as the Member State which may be identified as a best-performer within EU-27. Given its current level of economic welfare, the Czech Republic shows markedly lower relative risk of social exclusion. On the other hand observations above the regression line point to Member States which have rather high risk of poverty given their current level of GDP per capita. For Austria it may therefore be a target to move into the direction of relatively even better performing countries which are besides the Czech Republic the Nordic countries and the Netherlands.

Figure 53: Feeding-Out – the relation between economic welfare and the risk of poverty, 2008



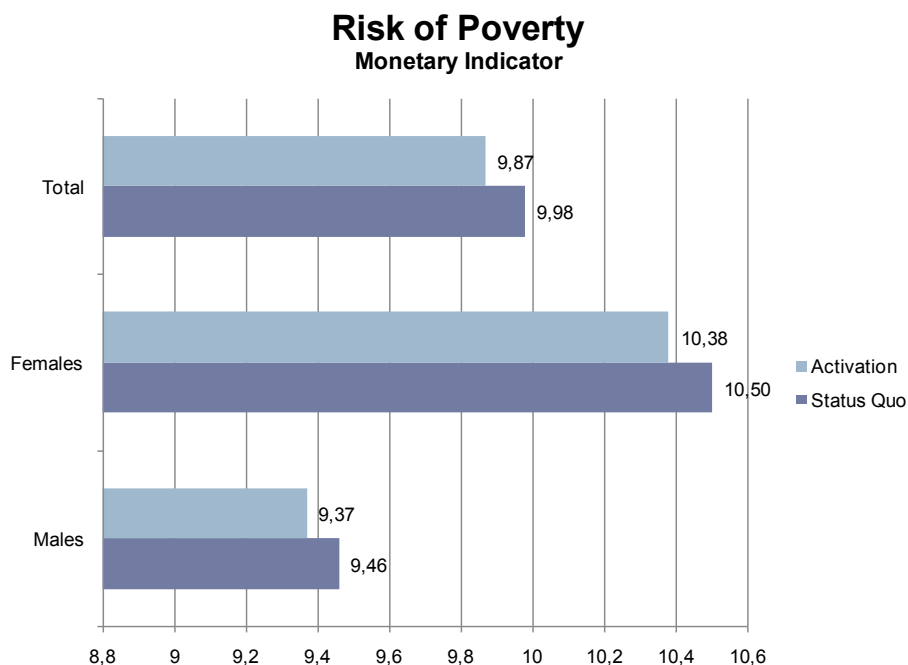
Source: own calculations, based on Eurostat.

The Europe 2020 strategy has acknowledged that economic growth alone will be not sufficient to achieve substantial reductions in the risk of social exclusion. It may be instructive, however, to quantify the expected impact of higher employment on the risk of poverty to get an intuition what might be the automatic contribution of higher growth on the reduction of the risk of social exclusion, i.e. the "Feeding-Out" effect.

The Institute for Advanced Studies has developed an analytical tool<sup>50</sup> in order to quantify the effects of changes in economic conditions on the risk of monetary poverty. Figure 54 reports the estimated impact of an increase in the activity rate of 1 percentage point. As can be seen the results point to positive, however, rather limited effect of higher employment on the reduction of the risk of poverty. The risk of poverty declines by 0.1 percentage points on average. In absolute terms this implies a reduction of 8,200 persons concerned. Referring to the Austrian employment goals within the Europe 2020 Strategy this implies that the effect of expected higher employment on the risk of poverty may lead to reduce the number of persons affects by about 20.000. Feeding Out may thus help to achieve less than 10 % of the Austrian goal for the reduction of social exclusion. Therefore there is good reason to assume that specific targeted measures will be necessary to complement the employment policies to make the progress necessary in reducing the risk of social exclusion.

<sup>50</sup> See Felderer et al. (2010).

Figure 54: Reduction of Risk of Poverty due to an increase in the participation rate of 1 percentage point



Source: IHS.

The calculations above confirm the need of a complementary approach to fight social exclusion by combining overall measures to increase economic growth with specific targeted measures to support specific vulnerable groups of the population in order to get better integrated into the labour market and the society. In this respect the Austrian approach to reduce the risk of social exclusion seems to be well balanced.

### Summary

An important innovation of the EU2020 strategy compared to the Lisbon strategy is that social inclusion has become an explicit priority. Overall the EU has set itself the ambitious target to reduce the number of persons at risk of poverty and social exclusion within the European Union by 20 Million persons. Despite a relatively favourable position of Austria in this respect since the share of population at risk of social exclusion is 6 percentage points below the average of EU-27, the Austrian government has set itself the ambitious target to reduce the risk of poverty and social exclusion by 15 percent of its current level. The Austrian strategy is in accordance with the idea laid down in the strategy Europe 2020 that increasing social cohesion will need a complementary approach that combines policies to enhance the growth potential with targeted policy measures to support specific vulnerable groups of the population.

Using an analytical tool developed at the Institute for Advanced Studies we estimate that achieving the employment goals of the Austrian government within Europe 2020 may directly reduce the risk of poverty by about 20.000 persons. This may therefore help to achieve less than 10% of the Austrian goal for the reduction of social exclusion, which confirms the importance of targeted support for specific groups of the population to achieve the ambitious targets of the Austrian government.



## Summary

### *Assessing the Lisbon Strategy 2005-2010*

During the second half of the Lisbon Agenda the Austrian government implemented within the framework of the National Reform Programme a host of policies and reforms aimed at reaching the Lisbon goals and at boosting growth and employment in general. When assessing these efforts, two aspects need to be borne in mind: first, from 2008 to 2010, exceptionally unfavourable macro-economic circumstances prevailed, not only affecting the macro-economic goals but also the overall reform agenda, as reforms always need economic resources and political energy which were to a considerable extent invested in combating the economic crisis. Second, the assessment of the Lisbon Strategy in Austria suffers from a lack of data in particular as regards structural developments. The most recent data are often only available for the year 2007 or 2008, so that a final and detailed structural assessment will in some areas only be possible in around two or three years.

Nevertheless, it can be said that the Austrian efforts within the Lisbon Strategy were successful at either reaching the targets or initiating positive trends towards meeting these European and national targets. In some instances the targets were reached or almost reached (R&D intensity, employment rate), in some areas Austria was the European top performer (e-government, growth in R&D intensity, unemployment rate<sup>51</sup>). In all areas there is a positive trend towards reaching the goals or towards improving the conditions for economic growth and high employment in Austria (e.g. financial market development). In some areas, there is still some way to go to meet these European and Austrian goals or to improve economic performance (e.g. human resources for innovation, climate change goals, employment of the elderly and of the low-skilled).

Independently of meeting the goals, the activities produced considerable economic effects in terms of both GDP growth and employment. In the areas infrastructure, information and communication technologies (ICT), development of the environmental technology sector, active labour market policies and SME policies, substantial measures were taken to improve the conditions for growth and employment and to boost GDP growth.

### *Expected effects of meeting the EU 2020 goals*

Meeting the Austrian goals within the framework of the Europe 2020 strategy in the areas of R&D intensity, tertiary education and employment would boost real GDP growth by 0.3 percentage points between 2010 and 2020. This is a considerable effect when compared with Austrian medium-term trend growth which hovers around 2 percent. The effects of meeting the goals continues beyond 2020, by 2050 the level of real GDP would be more than 5% higher in comparison with a no policy change-scenario.

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<sup>51</sup> The good performance of the Austrian labour market during the crisis in European comparison is particularly noteworthy. The seasonally adjusted unemployment rate stood at 4.3 percent in August 2010, which is the lowest value among all countries in the European Union.

The economic effects of meeting the climate change goals can only be illustrated as not enough is known to build a comprehensive model of the economic effects of combating climate change. Considerably positive economic effects are likely due to both investment effects and longer-term savings on operation costs (e.g. reduced energy bill). One million Euro invested in "green" measures broadly speaking leads to approximately 11 to 16 new jobs. As regards poverty, we estimate that achieving the employment goals may directly reduce the risk of poverty by about 20.000 persons. This may therefore help to achieve less than 10% of the Austrian goal for the reduction of social exclusion, which confirms the importance of targeted support for specific groups of the population to achieve the ambitious targets. The present study also identifies bottlenecks to reach the EU2020 targets, i.e. areas where measures directed at removing the bottlenecks would be particularly effective in contributing to reach the EU2020 targets.

## References

- Acemoglu, D., Introduction to Modern Economic Growth, Princeton University Press, 2008.
- Aghion, P., Durlauf, S., From Growth Theory to Policy Design, 2007.
- Aiginger, K., Falk, R., Reinstaller, A., Reaching Out to the Future Needs Radical Change. Towards a New Policy for Science, Innovation and Technology in Austria, Synthesebericht der Systemevaluierung des österreichischen Forschungsförderung und –finanzierung, Wien, 2009.
- Alcala, F., & Ciccone, A., "Trade, and Productivity." Quarterly Journal of Economics, vol. 119, no. 2; 2004.
- Arpaia, A., Curci, N., Meyermans, E., Peschner, J., Pierini, F., Short time working arrangements as response to cyclical fluctuation, European Economy Occasional Papers 64, 2010.
- Asfinag AG, Company Reports for the years 2005 – 2009, Vienna.
- Aumayr, C., Blien, U., Dauth, W., Makroökonomische Effekte der Aktiven Arbeitsmarktpolitik in Österreich 2001-2007 – Eine Regionalökonomische Evaluierung, Studie des Joanneum Research in Zusammenarbeit mit dem Institut für Arbeitsmarkt- und Berufsforschung und der Johann Wolfgang Goethe Universität in Frankfurt am Main, 2009.
- Baumgartner, J., Hofer, H., Kaniowski, S., Schuh, U., Url, Th., A Long-run Macroeconomic Model of the Austrian Economy (A-LMM). Model Documentation and Simulations, WIFO Working Papers, 2004, 224.
- Berger, J., Hanappi, T., Hofer, H., Müllbacher, S., Schuh, U., Schwarzbauer, W., Strohner, L., Weyerstraß, K., Konjunkturbelebende Maßnahmen der österreichischen Bundesregierung und der Bundesländer. Abschätzung der volkswirtschaftlichen Effekte. IHS, Wien, 2009.
- Berger, J., Keuschnigg, C., Keuschnigg, M., Miess, M., Strohner, L., Winter-Ebmer, R., Modelling of Labour Markets in the European Union – Final Report, IHS-Studie im Auftrag der DG EMPL der Europäischen Kommission, 2009.
- BMVIT, BMWF, BMWFJ, Austrian Research and Technology Report 2010, 2010.
- BMVIT, Gender Booklet 2008. Sechster Monitoringbericht zur Chancengleichheit von Frauen und Männern in außeruniversitären naturwissenschaftlich-technischen Forschungseinrichtungen für das Jahr 2008, 2009.
- BMVIT, Innovationsfaktor Humanressourcen. Brennpunkt NachwuchsforscherInnen, 2010.
- BMWFJ, Wirtschaftsbericht Österreich 2010, 2010.
- Boone, J., Bovenberg, L., Optimal Labor Taxation and Search, Journal of Public Economics 85, 2002, pp. 53-97.
- Breuss, F., Kaniowski, S., Schratzenstaller, M., Gesamtwirtschaftliche Auswirkungen der Konjunkturpakete I und II und der Steuerreform 2009. WIFO, Wien, 2009.
- Bundesministerium für Arbeit, Soziales und Konsumentenschutz (BMASK), Aktive Arbeitsmarktpolitik in Österreich 1994-2010, Wien, 2010.
- Bundesministerium für Arbeit, Soziales und Konsumentenschutz (BMASK) (2009a). Arbeitsmarktpolitik im Jahr 2009, Wien, 2009.
- Bundesministerium für Arbeit, Soziales und Konsumentenschutz (BMASK) (2009b). Arbeitsmarkt im Jahr 2009, Wien, 2009.
- Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft BMLFUW, Anpassung der Klimastrategie Österreichs zur Erreichung des Kyoto-Ziels 2008-2013. Vom Ministerrat am 21. März 2007 beschlossene Fassung, Wien, 2007. [www.klimastrategie.at](http://www.klimastrategie.at)
- Bundesministerium für Verkehr, Innovation und Technologie, Generalverkehrsplan Österreich 2002, Verkehrspolitische Grundsätze und Infrastrukturprogramm, Januar 2002.
- Bundesministerium für Wirtschaft, Familie und Jugend, Wirtschaftsbericht Österreich 2010, Juli 2010, Wien.
- Card, D., Kluve, J., Weber, A., Active Labor Market Policy Evaluations: A Meta-Analysis, IZA WP 4002, 2009.
- Czernich, N., Falck, O., Kretschmer, T. and Woessmann, L. (2009), Broadband Infrastructure and Economic Growth, CESifo Working Paper no. 2861, December.
- Dearden, L., Reed, H., Van Reenen, J., The impact of training on productivity and wages: evidence from British panel data, Oxford Bulletin of Economics and Statistics 68(4), 2006, pp. 397-421.
- Diamond P., National Debt in a Neoclassical Growth Model, American Economic Review 55, 1965, pp. 1126-1150.

- Elmeskov, J., Martin, J. P., Scarpetta, S., Key lessons for labour market reforms: evidence from OECD countries' experiences, *Swedish Economic Policy Review* 5, 1998, pp. 205-252.
- European Central Bank, Survey on the access to finance of small and medium-sized enterprises in the euro area — second half of 2009, 2010.
- European Commission (2009a), SBA Fact Sheet Austria, 2009.
- European commission (2009b), A Sustainable Future for Transport. Towards an integrated, technology-led and user-friendly system. Directorate General for Energy and Transport, Brussels, 2009.
- European Commission (2010), Europe 2020. A strategy for smart, sustainable and inclusive growth, Communication from the commission, March, Brussels.
- European Commission (2010a), Public Procurement Indicators 2008, 2010.
- European Commission (2010b). Indicators for monitoring the Employment Guidelines including indicators for additional employment analysis – 2010 compendium, 2010.
- European Commission, Communication From The Commission To The Council, The European Parliament, The European Economic And Social Committee And The Committee Of The Regions. "Think Small First" A "Small Business Act" for Europe, 2008.
- European Commission, Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, "Think Small First", a "Small Business Act" for Europe, Brussels, 25.6.2008, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0394:FIN:en:PDF>
- European Commission, Effects of ICT capital on economic growth, EU Commission Staff Paper, 30 June 2006, Brussels, 2006.
- European Commission, Employment in Europe 2006, Brussels, 2006.
- European Commission, Public Procurement Indicators 2008, [http://ec.europa.eu/internal\\_market/publicprocurement/docs/indicators2008\\_en.pdf](http://ec.europa.eu/internal_market/publicprocurement/docs/indicators2008_en.pdf)
- European Commission, SBA Fact Sheet Austria, '09, [http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/pdf/final/sba\\_fact\\_sheet\\_austria\\_en.pdf](http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/pdf/final/sba_fact_sheet_austria_en.pdf), 2009.
- European Council (2005), Presidency Conclusions of EC in Bruxelles, 22 & 23 March 2005.
- European Council (2000), Presidency Conclusions, Lisbon European Council, 23 & 24 March 2000.
- Falk, M., Hake, M., Wachstumswirkung der Forschungsausgaben, WIFO Monographie, Mai 2008.
- Felderer, B., Berger, J., Hofer, H., Schuh, U., Maßnahmen zur Bekämpfung der Arbeitslosigkeit, IHS-Studie im Auftrag der Industriellenvereinigung, 2010.
- Felderer, B., Fink M., Gstrein, M., Hanappi T., Müllbacher, S., Schönplflug, K., Schuh, U., Feeding-In und Feeding-Out in Österreich, IHS Research Report, Vienna, 2010.
- Felderer, B., Graf, N., Paterson, I. Polasek, W., Schwarzbauer, W. and Sellner, R., The European Services Market in the context of the Lisbon agenda. Productivity and employment in European services with high intensity of information and communications Technology (ICT), in: Losch, M. (ed.), Deepening the Lisbon Agenda: Studies on Productivity, Services and technologies, Vienna, 2005.
- Graf, N., Hofer, H., Winter-Ebmer, R., Labour Supply Effects of a Subsidised Old-Age Part-Time Scheme in Austria, IZA DP 4239, 2009.
- Griliches, Z., R&D and productivity, in: P. Stoneman (ed.), Handbook of the Economics of Innovation and Technological Change, Massachusetts: Cambridge Press, 1995, pp. 52-89.
- Hall, B. H., Mairesse, J., Mohnen, P., Measuring the Returns to R&D, 2009.
- Hanika, A., Klotz, J., Marik-Lebeck, S., Zukünftige Bevölkerungsentwicklung Österreichs 2009 bis 2050 (2075), Statistische Nachrichten, 2009, (11), pp. 963-985.
- Hayashi, F., Tobin's Marginal Q and Average Q, A Neoclassical Interpretation. *Econometrica* 50, 1982, pp. 213-224.
- Hofer, H., Kaniovski, S., Schuh, U., Url, Th., A Long-run Macroeconomic Model of the Austrian Economy (A-LMM) - An Update of the Model Documentation, IHS Research Report, 2007.
- Hofer, H., Kaniovski, S., Schuh, U., Url, Th., A Long-run Macroeconomic Model of the Austrian Economy (A-LMM) - An Update of the Model Documentation, IHS Research Report, 2010.

- IHS, Austrian Economic growth forecast 2010-2011, September 2010.
- IHS, Evaluation of the Austrian National Reform Programme. Effects on Growth and Employment. Study on behalf of the Austrian Federal Ministry of Economics and Labour (BMWA), 2006.
- IHS, Prognose der Österreichischen Wirtschaft 2010-2011: Stabilisierung der Konjunktur in Österreich, September 2010.
- IHS, The European Services Market in the Context of the Lisbon Agenda - Productivity and Employment in European Services with high Intensity of Information and Communications Technology (ICT) - Study commissioned by the Federal Chancellery of Austria, 2005.
- Janger, J., Rahmenbedingungen, Arbeitspaket 1 der Evaluierung des österreichischen Innovationssystems, Wien: WIFO-convelop-KMFA-prognos, 2009.
- Janger, J., Pechar, H., Organisatorische Rahmenbedingungen für die Entstehung und Nachhaltigkeit wissenschaftlicher Qualität an Österreichs Universitäten, 2010.
- Jaumotte, F., Pain, N., From Ideas to Development: The Determinants of R&D and Patenting, OECD, Economics Department, Dezember 2005, <http://ideas.repec.org/p/oec/ecoaaa/457-en.html> (zugegriffen 9. Oktober 2010).
- Jirik, C., Taudes, A., Evaluierung Breitbandinitiative 2003 des Bundesministeriums für Verkehr, Innovation und Technologie, May, Vienna, 2009.
- Kettner, C., Kletzan-Slamanig, D., Köppl, A., Schleicher, St. (WIFO), Koller, S.-Ch., Leopold, A., Reinsberger, K., Steininger, K.W. (Wegener Center), Schnitzer, H. (TUG-IPE), Karner, A. (KWI), Lang, R. (IPMT), Nakicenovic, N., Resch, G. (EEG), Nationaler Aktionsplan 2010 für erneuerbare Energien für Österreich, Juli 2010. WIFO Monographien 7/2010.
- Kettner, C., Köppl, A., Schleicher, St., The EU Emission Trading Scheme. Insights from the First Trading Years with a Focus on Price Volatility, WIFO Working Papers, 368/2010.
- Kletzan-Slamanig, D., Steininger, K., Gesamtwirtschaftliche Effekte der klimarelevanten Maßnahmen im Rahmen der Umweltförderung im Inland 2009. WIFO-Monographien 10/2010.
- Kluve, J., The Effectiveness of European Active Labor Market Policy, IZA DP 2018, 2007.
- Lechner, M., Miquel, R., Wunsch, C., Long Run Effects of Public Sector Sponsored Training in West Germany, CEPR DP 4851, 2005.
- Lee, H., Ricci, L. & Rigobon, R., Once again, is openness good for growth, Working Paper 10749, NBER, 2004.
- Lutz, H., Mahringer, H., Pöschl, A., Evaluierung der österreichischen Arbeitsmarktförderung 2000-2003, Studie des österreichischen Instituts für Wirtschaftsforschung, 2005.
- Lutz, H., Mahringer, H., Wirkt die Arbeitsmarktpolitik in Österreich? WIFO Monatsberichte 3/2007.
- Martin, J., Grubb, D., What Works and for Whom: A Review of OECD Countries' Experiences with Active Labour Market Policies, Swedish Economic Review 8, 2001, pp. 9-56.
- Meyer, I., Kratena, K., Wüger, M., The Impact of Technological Change and Lifestyles on the Energy Demand of Households. A Combination of Aggregate and Individual Household Analysis, WIFO Working Papers 334 February 2009.
- Meyer, I., Wessely, S., Determinanten und Energieeffizienz der österreichischen Pkw-Flotte, In WIFO Monatsbericht 4/2010, pp. 389-399.
- Mincer, J., Education and Earnings, Columbia University Press, 1974
- Mortensen, D., Job search and labour market analysis, in: Ashenfelter, O., Layard, R. (eds.), Handbook of Labor Economics 2. Amsterdam: Elsevier Science, 1986.
- Nickell, S., Layard, R., Labour market institutions and economic performance, in: Ashenfelter, O., Card, D. (Hrsg.), Handbook of Labour Economics, Elsevier, Amsterdam, 1999.
- ÖBB Holding, Company Reports for the years 2005 – 2008, Vienna.
- ÖBB Infrastruktur AG, Company Report, Vienna, 2009.
- OECD (2010a). Employment Outlook 2010, Paris, 2010.
- OECD (2010b). Education at a Glance 2010, Paris, 2010.
- OECD, Science & Information Technology 2006, vol. 2006, no. 16, Paris, 2006.
- OECD, The sources of economic growth in OECD countries, Paris, 2003.

- Pissarides, C. A., *Equilibrium Unemployment Theory*, 2nd ed., Cambridge, MA: MIT Press, 2000.
- Reinstaller, A., Unterlass, F., "Forschungs- und Entwicklungsintensität im österreichischen Unternehmenssektor. Entwicklung und Struktur zwischen 1998 und 2004 im Vergleich mit anderen OECD-Ländern", *WIFO Monatsberichte*, 2/2008, pp. 133-147.
- Romp, W., de Haan, J., *Public capital and economic growth: a critical survey*, EIB papers vol. 10 (1), 2005, pp. 40-42.
- Samuelson, P. A., *An Exact Consumption Loan Model of Interest with or without the Social Contrivance of Money*, *Journal of Political Economy* 66, 1958, pp. 467-482.
- Solow, R. M., *Growth Theory - An Exposition*, Oxford University Press, Oxford, 2000.
- Steiner, M., *Early School Leaving in Österreich 2008*, IHS-Studie im Auftrag der Kammer für Arbeiter und Angestellte Wien, 2009.
- Steiner, M., Pessl, G., Wagner, E., Plate, M., *Evaluierung ESF "Beschäftigung" im Bereich Erwachsenenbildung - Zwischenbericht*, IHS-Studie im Auftrag des Bundesministeriums für Unterricht, Kunst und Kultur, 2010.
- Timmer, M. P., Jorgenson, D. W., *Structural Change in Advanced Nations: A New Set of Stylised Facts*. Research Memorandum GD-115. Groningen Growth and Development Centre, 2009.
- Van der Linden, B., *Equilibrium Evaluation of Active Labor Market Programmes Enhancing Matching Effectiveness*, IZA DP 1526, 2005.
- Wieser, R., *Research and Development Productivity and Spillovers: Empirical evidence at the firm level*, *Journal of Economic Surveys*, 2005, 19(4), pp. 587-621.
- WIFO, *Prognose für 2010 und 2011: Aufschwung mit anhaltender Unsicherheit*, September 2010.