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Trade Barriers in Services and Competitive Strengths in the Austrian Service Sector
-
An Analysis at the Detailed Sector Level

Wolfmayr, Y.

Abstract

This study provides a thourough and detailed analysis of the competitiveness of the Austrian service sectors. It combines several industry classifications reflecting different structural features and international regulatory regimes that might be relevant for a sector's export potential and international competitiveness. These features are the skill and factor intensity, the intrinsic tradability and different regulatory regimes in international trade. For the first time this study applies a newly developed taxonomy of services which represents the different degrees of openness to services trade as reflected by the willingness of countries to submit full or partial commitments under the GATS. The analysis found a clear dominance of activities characterized by unfavourable sector characteristics in terms of skills and factor inputs. Furthermore, the structural change towards high-skilled labour intensive and knowledge intensive service sectors was found to be rather slow. At the detailed sector level, the analysis highlighted "consultancy, legal, accounting, book-keeping and market research services", the "renting of machinery and equipment sector", as well as "engineering, architectural activities and technical testing and analysis" as the most promising fields of activity in the group of high-skilled sectors already facing a relatively liberal international trade regime. The results were less favourable for the group of computer services. Within the group of sectors facing medium regulated trade regimes the R&D sector exhibited a very dynamic development paired with a good, but deteriorating competitive position. Insurance services were found to hold a weak and strongly deteriorating competitive advantage in terms of relative unit labour costs. At the same time the productivity gap to some of the European countries was found to be extremely wide. The growth performance of financial services which face the most regulated internationel trade regime was weak as was the competitive position.

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WIFO

A-1103 WIEN, POSTFACH 91
TEL. 798 26 01 • FAX 798 93 86

ÖSTERREICHISCHES INSTITUT FÜR WIRTSCHAFTSFORSCHUNG

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Yvonne Wolfmayr

Projektkoordination: Yvonne Wolfmayr, Irene Langer

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Yvonne Wolfmayr

Studie des Österreichischen Instituts für Wirtschaftsforschung im Auftrag des Bundesministeriums für Wirtschaft und Arbeit

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Projektkoordination: Yvonne Wolfmayr, Irene Langer

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E-Mail-Adressen: Yvonne.Wolfmayr@wifo.ac.at, Irene.Langer@wifo.ac.at

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Zusammenfassung und wirtschaftspolitische Schlussfolgerungen

Wo liegen die besonderen Stärken des österreichischen Dienstleistungssektors und in welchen Bereichen sind Exportpotentiale aufgrund von administrativen Hemmnissen noch nicht ausgeschöpft? Wo hätten Politikmaßnahmen den größten Effekt und welche wirtschaftspolitischen Anstrengungen kann Österreich setzen, um zukunftsträchtige Dienstleistungsaktivitäten zu fördern und zu stärken? Das sind die zentralen Fragen dieser Studie. Die Besonderheit der Analyse liegt dabei in der Verwendung einer neuen Taxonomie zu Handelsregimen nach Dienstleistungssektoren, die schwer überschaubare Informationen aus dem GATS (mittels statistischer Verfahren) in analytisch sinnvolle Gruppierungen überführt, und einer Verknüpfung dieser Brancheninformation zu Handelsbarrieren mit anderen am WIFO entwickelten Branchentaxonomien (*Mayerhofer - Palme*, 2001). Diese teilen die Dienstleistungssektoren nach den Kriterien der Handelbarkeit (international, regional), der Faktorintensität (arbeitsintensiv, kapitalintensiv, technologie- softwareintensiv) und der Skillintensität (Qualifikation der Arbeitnehmer) ein. Aus der Verbindung all dieser Sektorinformationen wurde eine neue Typologie für Dienstleistungsbranchen hergeleitet, die in weiterer Folge als Raster der detaillierten Betrachtung der Wettbewerbsindikatoren, der Export- und Gründungsaktivität sowie der Beschäftigungs- und Produktionsdynamik übergestülpt wurde.

Jede Analyse des Dienstleistungssektors muss dabei berücksichtigen, dass die Bedeutung einzelner Dienstleistungsaktivitäten weit über deren eigenen Beitrag zu Produktion und Export hinausgeht. Da diese Dienstleistungen als Inputs in weiten Bereichen der Wirtschaft verwendet werden, bestimmt deren Effizienz sowie Innovations- und Technologieorientierung auch über die Konkurrenzfähigkeit vieler anderer Bereiche der Wirtschaft. Die größte Bedeutung kommt dabei den so genannten skill- und wissensintensiven Dienstleistungen zu. Nicht nur als wichtige Produzenten neuer Technologien (Computer, Software, F&E) oder als Träger und Vermittler von Wissen und Know-how (Schulungen, Beratung), sondern auch aufgrund ihrer weltweit dynamischen Entwicklung und ihres großen Marktpotentials. Allerdings besteht gerade bei den zukunftsträchtigen Aktivitäten des Dienstleistungssektors ein großer Wettbewerb zwischen Standorten. Gleichzeitig bewirkt die Existenz von so genannten "external economies of scale" eine räumliche Konzentration und Ballung des Angebots in einigen großen Dienstleistungszentren. Dienstleistungscluster schaffen Vorteile aus den niedrigeren Zugangskosten zu Information und Wissen, die wichtigsten Inputs im Produktionsprozess moderner Dienstleistungen sind, der größeren Informationsdichte, den Aufbau eines spezialisierten Humankapitals und anderen Synergien. Durch selbstverstärkende Mechanismen werden die Standortvorteile dieser Zentren für "Nachzügler" uneinholbar[1]). Jede Nachahmungsstrategie ist in einer solchen Situation ungeeignet. Mehr Erfolg versprechen Nischenstrategien sowie die Verstärkung und Förderung bereits vorhandener Kompetenzen. Gleichzeitig sollten jedoch Aktivitäten, die vergleichsweise schwach ausgebildet und/oder wettbewerbsschwach sind, für das Wachstum und die Konkurrenzfähigkeit wichtiger Kompetenzfelder jedoch unverzichtbar sind, gefördert werden – dazu zählen F&E-Dienste ebenso wie Computerdienste oder spezifische Beratungstätigkeiten.

Die Ergebnisse der detaillierten Analysen des österreichischen Dienstleistungssektors kann man folgend zusammenfassen:

- Während der Dienstleistungssektor in der EU15 und auch in den neuen EU-Mitgliedstaaten erheblich zur Produktivitätssteigerung beitrug blieb der Beitrag des Tertiärsektors in Österreich besonders gering. So ging in der EU15 fast die Hälfte der Produktivitätsgewinne in der Periode 1995 - 2005 auf Dienstleistungen zurück (Produktivitätswachstum +1,1% p. a.; davon Dienstleistungen 0,5 Prozentpunkte). In den Niederlanden, Dänemark und Norwegen übertraf der Beitrag des Tertiärsektors jenen aller anderen Wirtschaftsbereiche. In Österreich waren nur 0,2 Prozentpunkte des insgesamt erheblichen Produktivitätsgewinns von +1,6% p. a. auf den Dienstleistungssektor zurückzuführen. In vielen Bereichen des österreichischen Dienstleistungssektors dürfte es daher noch erhebliche Potentiale für effizienzsteigernde Maßnahmen geben.
- Zu den Sektoren mit liberalem Handelsregime zählen Computer- und Informatikdienstleistungen ebenso wie das Beherbergungswesen, unternehmensnahe Dienste wie Architektur- und Ingenieurbüros, Rechtsdienste, die Unternehmensberater sowie Teilgebiete des Einzelhandels. Mehr als die Hälfte der Beschäftigung und der Produktion des gesamten Dienstleistungssektors entfällt auf diese Branchen. Rund 45% der Gesamtbeschäftigung im Dienstleistungssektor und 36% der Produktion entfallen dabei auf Sektoren mit an sich geringer Handelbarkeit der Dienstleistung im traditionellen Sinn. Handelbar werden diese Dienstleistungen über Direktinvestitionen oder durch den Grenzübertritt natürlicher Personen.

[1]) Beispiele für Ballungszentren im Dienstleistungssektor sind die Finanzzentren London, New York oder Tokio, aber auch Silicon Valley in der Forschung und Entwicklung.

- Der österreichische Dienstleistungssektor zeichnet sich weiterhin durch eine zu hohe Spezialisierung auf Branchen mit einem hohen Anteil niedrig qualifizierter Arbeitnehmer aus. Dies zeigt sich insbesondere in jener Gruppe von Dienstleistungen, die bereits durch ein liberales Handelsregime gekennzeichnet ist und auf die starke Rolle der traditionellen Dienstleistungsbereiche (Tourismus, Transport, Bauwesen und Einzelhandel) zurückzuführen ist. Dieses Strukturdefizit wird nur langsam abgebaut. Die Resultate zur Wettbewerbsfähigkeit der skill- und wissensintensiven Dienstleistungen ergeben ein uneinheitliches Bild. Die besten Ergebnisse zeigen sich für Sektoren mit einem mittleren Liberalisierungsgrad, die schlechtesten für Sektoren mit einem stark regulierten internationalen Handelsregime. In den Sektoren mit einem liberalen Handelsregime resultiert die schlechte Wettbewerbsposition vor allem aus der im internationalen Vergleich niedrigen Produktivität.
- Auf detaillierter Branchenebene zeigt sich für Sektoren mit vorteilhaften Branchencharakteristiken (d. h. relativ hohe Skillintensität sowie Technologie- bzw. Softwareintensität) ein differenziertes Bild:
  - Ein überaus positives Bild zeichnet die Analyse für die Rechts-, Steuer- und Unternehmensberatung, die Architektur- und Ingenieurbüros sowie für die Vermietung von Maschinen. All diese Dienstleistungsaktivitäten verbinden eine gute Wachstumsperformance und eine hohe Gründungstätigkeit mit einer guten und sich laufend verbessernden Wettbewerbsfähigkeit.
  - Im Telekommunikationsbereich lässt die Lohnstückkostenposition auf einen kleinen Wettbewerbsnachteil schließen. Die Produktivitätslücke zu europäischen Vergleichsländern ist jedoch groß, obwohl sie über die Zeit etwas verkleinert werden konnte.
  - Eine hohe Gründungstätigkeit, dynamisches Wachstum von Produktion und Beschäftigung, aber eine niedrigere Produktivität und höhere Lohnstückkosten als in den europäischen Vergleichsländern charakterisieren den Computersektor. Das Potential für Wettbewerbsverbesserungen ist gerade in diesem wichtigen Bereich besonders groß. Für Hardware- und Softwareberatung ergibt sich ein weniger alarmierendes Bild. In beiden Sektoren konnte die Produktivität deutlich gesteigert werden, während die Entwicklung bei Datenbank- und Datenverarbeitungsdiensten unterdurchschnittlich war.
  - Für skillintensive und softwareintensive Dienstleistungen mit weniger liberalem Marktzugang (mittleres Regulierungsniveau) ergibt sich eine gute Position bei naturwissenschaftlichen F&E - Dienstleistungen und der Vermietung von Verkehrsmitteln in Bezug auf die Produktivität und die Lohnstückkosten, aber eine relative Verschlechterung in den Performanceindikatoren über die Zeit. Bei den Versicherungen ist die Ausgangsposition besonders schwach.

- Finanzdienstleistungen finden sich unter den Sektoren, für die das GATS eine starke Regulierung des Marktzugangs signalisiert. Die Struktur- und Leistungsindikatoren zeichnen ein unvorteilhaftes Bild einer schwachen und sich weiter verschlechternden Wettbewerbsposition sowie eines schwachen Wachstums in der Bruttowertschöpfung und der Beschäftigung.

Ein großer Teil der wichtigen unternehmensnahen Dienstleistungen mit vorteilhaften Branchencharakteristiken sowie der Aktivitäten aus dem Bereich der Informations- und Kommunikationstechnologien (IKT) sieht sich offensichtlich bereits einem relativ liberalem Marktzugangsregime gegenüber. Die zukünftige Entwicklung dieser Sektoren wird in einem hohen Ausmaß von der preislichen (Lohnstückkosten, Produktivität) und der "technologischen" Wettbewerbsfähigkeit (Qualität und Innovationskraft) der Sektoren abhängen. Für unternehmensnahe Dienste, wie etwa F&E - Leistungen, Versicherungen und Finanzdienste sind die Marktzugangsbestimmungen auf internationalen Märkten als weiterhin restriktiv einzuschätzen. Neben Maßnahmen, die zur Erhöhung der Effizienz und der internationalen Wettbewerbsfähigkeit beitragen, hätten weitere Liberalisierungsschritte hier wohl den größten Effekt.

Der Fokus wirtschaftspolitischer Maßnahmen muss aus bereits genannten Gründen auf diese wissens- und skillintensiven Dienstleistungsbereiche ("KIBS") gerichtet sein. Zumindest mittelfristig müssen diese jedoch durch wirtschaftspolitische Anstrengungen für die in Österreich beschäftigungsstarken traditionellen Bereiche des Dienstleistungssektors (Tourismus, Transport, Einzelhandel und Bau) begleitet werden. Durch den hohen Anteil niedrig qualifizierter Arbeitskräfte sind gerade diese Bereiche der Niedriglohnkonkurrenz, insbesondere aus den mittel- und osteuropäischen Ländern ausgesetzt. Dennoch sollte auch diese Politik weniger defensiv, sondern offensiv gestaltet sein. Wünschenswert wäre eine Strategie, die sicherstellt, dass der zu erwartende Strukturwandel die Anpassungsfähigkeit des heimischen Arbeitsmarktes und der heimischen Dienstleister nicht überfordert, aber dennoch dazu beiträgt, die Wettbewerbsfähigkeit dieser Unternehmen zu erhöhen und die Nutzung jener Potentiale vorantreibt, die die neuen Märkte in Mittel- und Osteuropa auch für diese Bereiche bieten.

- Der Tourismus zählt dabei zu jenen Bereichen, in denen Österreich vor allem beim Städte- und Kulturtourismus, im Wintersport und bei erlebnisorientierten Kurzurlauben den komparativen Vorteil ausbauen kann. Während dieser Sektor allgemein durch besonders niedrige Löhne und niedrige Produktivität charakterisiert ist, ergibt der internationale Vergleich in dieser Studie ein relativ vorteilhaftes Bild. Ein stärkerer Fokus auf Qualitätstourismus, Ganzjahrestourismus sowie die forcierte Bewerbung und Erschließung von Hoffnungsmärkten (Nordamerika, China, Russland, neue EU-Mitgliedsländer) werden für die Zukunft wichtig sein. Eine tiefere Analyse sowie detaillierte wirtschaftspolitische Schlussfolgerungen und Vorschläge wurden im WIFO-Weißbuch (*Smeral*, 2006) und in *Smeral* (2007) erarbeitet.

- Der Transportsektor umfasst eine Vielzahl von Aktivitäten, vom Landtransport, Wassertransport, Flugverkehr und der Schifffahrt bis hin zur Spedition und Verkehrsvermittlung sowie Reiseveranstaltern und Reisebüros. Den weitaus größten Teilbereich stellt dabei der Landverkehr dar. Dieser sieht sich bereits einem relativ liberalem Handelsregime gegenüber. Der Sektor nimmt eine gute Wettbewerbsposition ein, die sich auch laufend verbessert hat und zeigt überdies eine gute Wachstumsperformance mit einem hohen Anteil an Unternehmensgründungen. Weniger vorteilhaft ist dagegen das Resultat für die Hilfs- und Nebentätigkeiten des Verkehrs, die sich einem weniger liberalem Handelsregime gegenübersehen. Im internationalen Vergleich ist die Produktivität zwar höher, die Lohnstückkostenposition ist aber etwas ungünstiger. Die Bereiche Wassertransport und der Flugverkehr sind durch einen stark regulierten internationalen Marktzugang und schlechter internationaler Wettbewerbsposition gekennzeichnet.
- Auch der Bausektor ist ein äußerst heterogener Bereich, der neben dem Hoch- und Tiefbau, auch ein breites Spektrum kleinbetrieblich strukturierter Baunebentätigkeiten (etwa Fliesenleger, Zimmerei, Maler, Tischler usw.), aber auch human- bzw. kapitalintensive Baudienstleistungen (Planung, Projektmanagement, Vermietung von Baumaschinen etc.) umfasst. Das Handelsregime ist im Hoch- und Tiefbau als relativ liberal einzustufen. Der internationale Vergleich weist auf einen leichten Wettbewerbsnachteil hin, der allerdings über die Zeit kleiner wird. Der Bereich der Bauneben- und Bauhilfstätigkeiten sieht sich einem international weitgehend geschützten handelspolitischen Regime gegenüber. Im Vergleich zu Ländern aus den EU15 sind diese Sektoren durch eine höhere Produktivität aber durch keine Vorteile bei Lohnstückkosten gekennzeichnet. Weiters zeigen sich große Produktivitätsunterschiede zu den ost- und mitteleuropäischen Ländern, die die Nachteile des wesentlich höheren heimischen Lohnniveaus deutlich verringern. Auch auf mittlere Sicht wird das Preisgefälle zwischen Österreich und den Beitrittsländern hoch bleiben und Wettbewerbsnachteile der österreichischen Bauwirtschaft begründen. Andererseits ergeben sich gerade in den neuen Mitgliedstaaten durch die zusätzlichen Finanzierungsmöglichkeiten im Rahmen der EU-Strukturfonds, und auch im restlichen Osteuropa durch den hohen Nachholbedarf im Bereich Infrastruktur, Industriebau und Investitionen im Umweltbereich große Marktchancen und Potentiale. Diese Chancen können am ehesten von größeren Bauunternehmern wahrgenommen werden. Profitieren könnten dabei aber auch Betriebe, die als deren Subunternehmer agieren.
- Für den Einzelhandel ergibt die Analyse ein auch im europäischen Vergleich hohes Produktivitätsniveau aber in der Arbeitskostenposition eine schwache Wettbewerbsfähigkeit.

Die wirtschaftspolitischen Anstrengungen in Bezug auf die traditionellen Bereiche des österreichischen Dienstleistungssektors sind insbesondere auf mittlere Sicht wichtig und notwendig, dürfen aber nicht auf Kosten der Unterstützung der Expansion und effizienzsteigender Maßnahmen für die wissens- und humankapitalintensiven Dienstleistungen umgesetzt werden. Detaillierte wirtschaftspolitische Vorschläge zur Unterstützung des Wachstums und der Internationalisierung von Dienstleistungen im Allgemeinen und der skillintensiven Aktivitäten im Besonderen hat das WIFO erst kürzlich im WIFO-Weißbuch erarbeitet (*Wolfmayr et al.*, 2006). Folgende Strategieelemente scheinen dabei von besonderer Bedeutung zu sein:

- Die Förderung aktiver Direktinvestitionen: Für viele Dienstleistungen stellt die Internationalisierung über Auslandsniederlassungen (Mode 3 der Dienstleistungserbringung) die einzige Möglichkeit zum Export von Leistungen dar. Monetäre Zuwendungen müssen allerdings von Informationsmaßnahmen und Beratungshilfen begleitet werden um damit vor allem kleineren Dienstleistungsunternehmen das notwendige Organisations- und Management- sowie Internationalisierungs-Know-how zur Verfügung zu stellen.
- Öffentlich bereit gestellte Informations- und Beratungshilfen, die Firmen bei der Entwicklung von Nischenstrategien individuell unterstützten, aber auch entsprechende Vorerfahrungen und "best practices" sinnvoll aufbereiten und breit diffundieren.
- Veränderung der rechtlichen Rahmenbedingungen, die besonders bei den freien Berufen im Berufs- und Standesrecht zu restriktiven Kompetenzabgrenzungen führen und eine Expansion in verwandte Bereiche ausschließen. Kleine heimische Betriebe sind damit im Vergleich zu internationalen, mutidisziplinären Planungsbüros oft nicht konkurrenzfähig.
- Qualifizierungs- und Weiterbildungsmaßnahmen: Innovations- und qualitätsfördernde Strategien und ein Strukturwandel in Richtung wissens- und skillintensiver Dienstleistungsbereiche sind letztlich nur dann erfolgreich, wenn das Ausbildungssystem den damit verbundenen Anforderungen an die Qualifikationsstruktur gerecht wird. Dabei gewinnt nicht nur die Hochschulausbildung und der Abbau von Defiziten im höchsten Ausbildungssegment an Bedeutung, sondern auch der weitere Aufbau postsekundärer Ausbildungsstätten, vermehrte Anreize für die betriebliche Weiterbildung und Investitionen in das Humankapital von gering qualifizierten Mitarbeitern in den Unternehmen sowie die Weiterentwicklung und Anpassung des dualen Systems auf sich rasch ändernde Berufsbilder. Zur Nutzung internationaler Marktchancen muss diese Qualifizierungsoffensive auch von einer verstärkten Vermittlung außenhandelsrelevanter Kompetenzen (Sprachkenntnisse, Marktkenntnisse, internationale Rechtskenntnisse, ect.) begleitet werden.
- Förderung der Innovationstätigkeit und F&E-Leistungen im Dienstleistungssektor: Dabei wird es vor allem darum gehen, die weitgehend immateriellen, nicht-technologischen Aspekte vieler Innovationen im Dienstleistungsbereich (neue Betriebs- und Arbeitsorganisation, effizientere Koordination innerbetrieblicher Netzwerke, Managementinnovationen etc.) stärker in den Fördersystemen zu verankern. Für die Wirtschaftspolitik relevant sind dabei noch folgende Resultate aus früheren Untersuchungen (*Dachs – Leo*, 1999; *Falk – Leo*, 2004): (i) Innovationen im

Dienstleistungssektor basieren in hohem Maße auf zugekaufter, externer Technologie und wenig auf eigener F&E; (ii) Defizite im unternehmensinternen Know-how in der Planung und in der organisatorischen Umsetzung der Innovationsprojekte sind die wichtigsten Hemmnisse im Innovationsprozess vieler Dienstleistungsunternehmen.

Abstract

This study provides a thorough and detailed analysis of the competitiveness of the Austrian service sectors. It combines several industry classifications reflecting different structural features and international regulatory regimes that might be relevant for a sector's export potential and international competitiveness. These features are the skill and factor intensity, the intrinsic tradability and different regulatory regimes in international trade. For the first time this study applies a newly developed taxonomy of services which represents the different degrees of openness to services trade as reflected by the willingness of countries to submit full or partial commitments under the GATS. The analysis found a clear dominance of activities characterized by unfavourable sector characteristics in terms of skills and factor inputs. Furthermore, the structural change towards high-skilled labour intensive and knowledge intensive service sectors was found to be rather slow. At the detailed sector level, the analysis highlighted "consultancy, legal, accounting, book-keeping and market research services", the "renting of machinery and equipment sector ", as well as "engineering, architectural activities and technical testing and analysis" as the most promising fields of activity in the group of high-skilled sectors already facing a relatively liberal international trade regime. The results were less favourable for the group of computer services. Within the group of sectors facing medium regulated trade regimes the R&D sector exhibited a very dynamic development paired with a good, but deteriorating competitive position. Insurance services were found to hold a weak and strongly deteriorating competitive advantage in terms of relative unit labour costs. At the same time the productivity gap to some of the European countries was found to be extremely wide. The growth performance of financial services which face the most regulated international trade regime was weak as was the competitive position.

1. Introduction and motivation[2])

The services sector not only is the largest and most important sector in developed economies, but in producing intermediate inputs for many sectors it influences the productivity, competitiveness and performance of large parts of the economy. Trade liberalisation and deregulation in the service sector is seen as one of the most important driving forces for the efficiency and productivity performance of the sector as well as the economy as a whole.

From the perspective of governments, knowledge of what are the major barriers to services trade, as well as which sectors are potentially most affected by international trade regimes is important for the development of negotiation priorities and the evaluation of negotiating progress. The estimation of actual services restrictions represents one of the most challenging areas in empirical research on services trade and liberalisation effects. The difficulties arise not only from the qualitative nature of most of the barriers to services trade but also from the large diversity of policy measures potentially affecting trade in services, the heterogeneity of the service industries and the different modes of supply and the possible complementarities between them. As a consequence, analysis of barriers to trade in services is an extremely complex issue involving various interlinked dimensions. Analysis has to be done not only along countries, sectors, modes of supply but also specific types of restrictions.

For these reasons relatively little empirical work, measuring restrictions on services and their economic impacts is available. *Wolfmayr – Peneder - Schöberl.* (2005) applied statistical cluster analysis to data on trade-related measures for individual services and modes of delivery derived from the GATS Individual Country Schedules. Employing this methodology, they were able to transform a large and extremely multifaceted data profile into a few categories with significant and economically meaningful discriminations between industries. In this process, they derived a new taxonomy of service industries comprising six different categories with each reflecting a different degree of openness to services trade as reflected by the willingness of countries to submit full or partial commitments under the GATS.

This paper will work from there and combine the taxonomy of service sectors according to political/administrative (established) barriers to trade developed in *Wolfmayr et al.* (2005) with other taxonomies of services according to their intrinsic tradability, their skill structure and their factor intensities (*Mayerhofer – Palme*, 2001). Combining information on intrinsic tradability, regulatory regimes and factor intensities with data on relative specialisation and performance indicators, it will try to identify the major strengths and weaknesses of the Austrian service sector and identify those service industries, where trade liberalisation might have the largest effect on raising the market potential for Austria.

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[2]) I would like to thank Michael Peneder for very useful comments.

The paper starts with a review on the methodologies used for measuring services and a short summary of the main methodological steps and results from applying statistical cluster analysis to trade-related restrictions in services in *Wolfmayr et al.* (2005) in chapter 2. Chapter 3 introduces and explains the industry classifications used and presents results from joining the new service industry taxonomy with information on the sector's intrinsic tradability as well as skills and factor intensities. Chapter 4 and chapter 5 apply the new taxonomy to Austrian data and indicators of performance, specialisation and competitiveness. Chapter 6 concludes and derives the main policy conclusions.

2. Measuring barriers to trade in services and creating a new taxonomy of service industries on the basis of GATS National Schedules of Commitments

2.1 Measuring barriers to trade – an overview

Amongst all the possible factors influencing the results of empirical studies into the gains from services trade liberalisation, the estimation of actual services restrictions represents one of the most critical areas (*Dihel*, 2003A). The major difficulties arise from the heterogeneity of the service industries and from the specific conceptual challenges determined by the special characteristics of services. Thus, due to the generally intangible and often non-storable nature of supply many services require the direct physical interaction between producers and consumers. Therefore, trade in services includes not only cross-border delivery as in goods trade, but also the movement of consumers to a supplier's country of residence (consumption abroad), the establishment of subsidiaries at the customer's location (commercial presence) and the temporary movement of people to the consumer's residence for the purpose of providing a service (presence of natural persons). This requires the identification and quantification of restrictions affecting the four different modes of supply, as well as complementarities between modes of supply.

Definition of trade in services within GATS

The negotiations to establish a multinational agreement on trade in services have furnished a very wide definition of services which breaks down such trade into four modes:

- Cross-border deliveries (mode 1): referring to services which do not require the simultaneous physical presence of provider and consumer and which are mailed, electronically transmitted, or otherwise transported across national borders.
- Consumption abroad (mode 2): which adverts to services demanded and consumed abroad. This implies a temporary migration or travel of the consumer – a tourist or a student - across national borders to the provider.
- Commercial presence (mode 3): which refers to services which require the presence of the provider on site. This mode is characterised by the establishment of a foreign based subsidiary or branch office, joint venture or partnership.
- Presence of natural persons (mode 4): wherein the service provider (or the employ of the service provider) crosses the border solely for the purpose of rendering the service and afterwards returns to his/her country of origin. In actual practice, modes 3 and 4 are often linked because mode 3 does not include the movement of natural persons.

Furthermore, given that trade in services does not usually involve cross-border trade but rather transactions occurring within one country or the other, impediments to services trade normally take the form of non-tariff trade barriers rather than border measures such as tariffs. Government regulations, licensing or certification requirements or other measures that effectively limit the access of foreign services suppliers to the domestic market are examples of barriers to services trade. As a result, account needs to be taken of a much larger diversity of barriers including non-discriminatory market access restrictions (measures that apply to both foreign and domestic service providers), such as the amount of firms allowed to enter the market. Additionally, it is necessary to determine whether regulations actually constitute barriers, as one cannot simply equate regulations with barriers (*Dihel*, 2003A).

The empirical work measuring restrictions in the service sectors has relied on two different groups of methodologies (*McGuire*, 2002, *Dihel*, 2003A). Methodologies that measure the level of restrictions on services (frequency measures) and methods used to measure the economic impact of restrictions on services.

The first group of measures groups restrictions and assigns numerical scores to each restriction category. Pioneering work in the measurement of barriers to services trade was undertaken along these lines by *Hoekman* (1995). He based his calculations on GATS Individual Country Schedules, which comprise all legally binding commitments made by WTO members concerning trade-related measures in individual service sectors and modes of delivery. In his work all commitments or restrictions listed in the GATS schedules are allocated an equal weight so that no account is taken of the actual restrictiveness of the policy measures maintained or the likely different economic impact.

Some of the more recent studies draw on more comprehensive qualitative databases of measures affecting trade in services and use weighting and scoring methods for assessing the restrictiveness of different measures taking into account the type of barriers and their likely relative economic impact. In contrast to *Hoekman* (1995) who uses commitments they use data sources reflecting actual restrictions. The latter approach has been termed as the "Australian approach" as it represents work initiated by the Australian Productivity Commission, the University of Adelaide and the Australian National University. However, these are constrained to either one mode of supply (*Hardin – Holmes*, 1997) or to one industry (*Findlay – Warren*, 2000; *Dihel – Kalinova*, 2004) or a subset of countries (*OECD*, 2003) which constrains comparability across sectors and/or countries and consequently, the scope of application[3]). Furthermore, the Australian approach requires more subjective judgement, not only with regard to the weighting and scoring system but also with regard to the selection of types of barriers included in the list of barriers. While these types of frequency measures approximate the relative degree of restrictiveness of trade barriers, they still do not provide any information on the economic impact.

[3]) See *Dihel* (2003A, 2003B) and *Chen – Schembri* (2002) for a comprehensive survey on the various methods used to measure barriers to services trade.

The second group of methods are used to produce measures of the effect of restrictions on services. *Francois – Hoekman* (1999A) use information on gross operating margins in different service industries and derive tariff equivalents by comparing actual margins to a benchmark price (average margin of liberal countries). The deviations of margins from the benchmark were taken as indicative for the relative magnitude of barriers. *Francois – Hoekman* (1999B) derive a quantity based measure on the basis of the gravity model of international trade and compare the estimated trade volumes in the absence of non-tariff barriers ("free trade benchmark") with actual trade volumes. The difference was taken to be indicative for barriers to trade and converted into a quantity effect.

Measures of this kind are useful mainly in identifying relative levels of protection across sectors and countries. An important drawback is that there is a great burden on the model being used. The worse the model, the more likely it is that estimates will have an upward bias. Also, since trade cannot be predicted accurately for particular industries and countries, it is not clear how the deviations should be interpreted and the extent to which existing trading patterns depart from free trade (*Stern*, 2000).

Again there is an "Australian approach" which doesn't derive the measures indirectly by comparing actual price levels to benchmark prices but directly estimates the determinants of price-cost margins by an econometric model augmented by measures of trade restrictiveness (frequency index). Examples are *Kalirajan* (2000) for the distribution services, *Kalirajan et. al* (2000) for banking, *Nguyen – Hong* (2000) for engineering, *Kang* (2000) for maritime transport[4]). *Dihel* (2002B) notes the need to separate the different effects of restrictions on prices, costs and rents, which is difficult but important because the way in which protection is modelled (price increasing restrictions vs. cost increasing restrictions) significantly influences the welfare results from CGE models.

Chen – Schembri (2002) evaluate different measures from the perspective of their information content, the data and resource requirement, the accuracy and reliability, their scope and their intended use (assessment of economic impact, guidance for trade negotiations). Table 1 summarises their findings.

[4]) Again, Dihel (2003A, 2003B) gives an excellent overview on the studies listed.

Table 1: Measurement of barriers – an evaluation based on Chen-Schembri (2002)

Measures		Information content	Data and resource requirement	Accuracy, reliability	Scope	Intended use	
						impact	guidance in negotiations
Frequency	Hoekman approach		x	x	x		x
Frequency	Australian approach	x		x			x
Frequency			x	x	x		x
Price/Quantity	Indirect approach	x			x	x	
Frequency			x	x	x		x
Price/Quantity	Direct approach	x				x	

The various frequency type measures are especially useful in identifying the types of barriers and the relative degree of protection across sectors and countries and can be especially useful as a basis for negotiating the targets and monitoring the progress of trade liberalisation. They have only limited value with regard to assessing the size of service barriers and the consequences of maintaining or eliminating these barriers (*Stern*, 2000). The Australian frequency measures have richer information content, but greater data and resource requirements and constrained comparability across sectors and therefore a narrower scope of application. On an industry-to industry basis the "Australian approach" is preferable, but its major drawback is the inherently subjective elements in determining the weights of different classes of restrictions. The "Hoekman approach" is preferable if measures are needed for a broad set of industries and countries for which comparable detailed data are not available.

Frequency measures are better in the area of accuracy and reliability especially when compared to the indirect approach in obtaining price based measures which are inferred from the estimation residuals. Because the direct approach employs frequency measures as explanatory variables, the accuracy and reliability of resulting estimates cannot be any better than that of frequency measure themselves. Again the price/cost measures by the direct approach have constrained comparability across sectors and therefore a narrower scope of application. An exception is *Francois - Hoekman* (1999A) measures based on operating margins, which can be applied over a broad range of sector and countries.

There is no perfect method to measure the barriers to trade in services. Each method has its strengths and weaknesses. A trade-off is to be made and decisions which method to prefer will also be based on aim of the analysis. If the goal is to provide guidance to trade negotiations measurement of barriers should focus on the size rather than impact measures. The Australian approach is preferable on an industry-to-industry basis (otherwise the information challenge is significant), the Hoekman approach relying on GATS commitments is preferable for analysis across sectors.

2.2 Taxonomy of regulatory regimes based on National Schedules of Commitments in the GATS

As to information on barriers to trade in services, the general lack of a comprehensive, centralised source of information is a major problem. The GATS Individual Country Schedules to date offer the most comprehensive information on barriers to trade in services. However, GATS schedules do not catch all barriers which are in place. Market access restrictions mainly concentrate on the 6 types of restrictions listed under the Agreement (see Box: National Schedules of commitments in the GATS), other possibly relevant regulations pertaining to tax regimes, or labour legislation, land availability, competition policy are examples of measures or policies that are insufficiently reflected in the schedules. Therefore, some studies, in particular those from the Australian Productivity Commission (summarised in *Dihel*, 2003A, 2003B and *Findlay – Warren*, 2000) supplemented the information from GATS schedules with other sources of information. One major advantage, using the GATS schedules - especially if analysis is to be made across sectors and across countries – is the use of the same information source for all sectors and countries and the somewhat greater objectiveness concerning the selection of the types of barriers to be included in the list of possible barriers. Another pro is the richness of the information, covering data not only across sectors and countries but also across the four different modes of supply and the classifications of restriction into discriminatory regulations, restricting only foreign service suppliers ("national treatment") or non-discriminatory regulations, restricting domestic and foreign service suppliers equally ("market access"). With such data at hand, statistical cluster analysis is a very powerful tool that, while taking account of the heterogeneity and diversity of the data across the various dimensions, condenses and aggregates information along a few robust distinctions towards economically meaningful groups of sectors, which have maximum homogeneity within the same class and minimum similarities across groups (*Peneder*, 1995).

Against this background (*Wolfmayr et al.*, 2005), elaborated on the methodology in *Hoekman* (1995) and applied statistical cluster analysis to data derived from the GATS National Schedules of Commitments, to build categories of industries according to the relative restrictiveness of policy regimes across countries pertaining to the specific services industries.

National Schedules of Commitments in the GATS

Industry-specific commitments

GATS revolves around sector-specific commitments which are listed by the member states for each of the altogether 155 service sectors and which are distinguished by four possible channels of delivery or "modes of supply" and two areas of application (market access and national treatment). The box on the "Definition of trade in services within GATS" describes each of the modes in more detail. The GATS explicitly lists six types of market access restrictions that are in principle prohibited. These are limitations on (1) the number of service suppliers allowed, (2) the value of transactions or assets, (3) the total quantity of service output, (4) the number of persons that may be employed, (5) the type of legal entity through which a service supplier is permitted to supply a service, and (6) participation of foreign capital. National treatment refers to the principle of non-discrimination and is defined as treatment of foreign supply no less favourable than that accorded to like domestic services or service providers. As *Hoekman* (1995) stated, market access obligations overlap with the national treatment requirements, as market access restrictions may be discriminatory as well as non-discriminatory.

Each member is free to determine the service sectors in which it is ready to take steps towards liberalisation ("positive listing approach") and to name those measures which it intends to retain within the sectors to be liberalised. This "positive listing" approach is a key feature of GATS, which offers flexibility not just by the fact that WTO member states can choose whether or not to enter into a commitment in any one sector; they can also define quantitative restrictions and discriminatory sector regulations within the frame of national treatment and market access.

For each sector, mode of supply and area of application basically three types of entries are possible. With an entry of "none", a country commits itself to guarantee free market access and/or full national treatment on any type of trade-related activity. It creates the most liberal trading environment and represents a "full commitment". On the other hand, countries giving "partial commitments" communicate and list all restrictions violating against market access and/or national treatment that are kept in place. These restrictions, however, are "bound", in the sense, that subsequent aggravation of restrictions and discriminations against market access or national treatment are banned. Finally, an entry of "unbound" indicates the absence of a commitment. The fourth option, as indicated above, is to not list a sector at all. For service sectors not listed in the national schedules any trade-related restrictions remain unbound – new and additional restrictions may be imposed in the future for this industry. In some cases, countries made the entry "unbound due to technical infeasibility" or "unbound*" to identify modes of supply that are "technically infeasible" (e.g. cross-border supply of hair-dressing).

Horizontal (cross-industry) Commitments

Besides industry-specific commitments, national schedules of commitments contain cross-industry commitments, referred to as "horizontal" commitments in the GATS. These usually address policies pertaining to a specific mode of supply, independent of the specific sector involved. Most of the horizontal commitments refer to measures related to investment, taxation, government subsidies, real estate, and the temporary entry and stay of natural persons and thus are most common for mode 3 (commercial presence) and mode 4 (presence of natural persons). The co-existence of industry-specific commitments and horizontal commitments introduces another complexity into the GATS national schedules and creates the potential for confusion and misinterpretations. To get a full picture of the commitments undertaken, industry-specific limitations have to be read and interpreted together with horizontal commitments.

The main data source was the online WTO services database (pre-defined reports page)[5]) which allows one to download all specific commitments and horizontal commitments for each country and mode of supply. The database contains national schedules of 133 countries. There are 155 sectors distinguished in the GNS classification list (GNS/W/120) that may be listed for each of the four modes of supply.

In deriving the taxonomy they proceeded in 3 steps:

1. Classification of information on commitments;
2. Calculation of frequency shares across countries by mode of supply and area of application (market access and national treatment);
3. Statistical cluster analysis to derive the new taxonomy.

Thus, as a first step, and for the purpose of making the individual schedules comparable across countries/industries/modes, the sectoral commitments were classified into five different categories. For any sector included in its Schedule, a country may specify a commitment within a spectrum whose opposing ends are guaranteed market access/national treatment without limitations (full commitments with the entry "none") and the denial of any such guarantees (no bindings; "unbound"). The related empirical work has proceeded in much the same way, but by building only three groups (none, bound, unbound), provided for lesser detail (*Hoekman*, 1995; *WTO*, 1999; *Langhammer*, 2003; *Adlung – Roy*, 2005). The five categories built in *Wolfmayr – Peneder - Schöberl* (2005) are:

(1) "None", implying free market access and/or full national treatment;

(2) "None +", referring to entries in which countries generally guarantee free market access and full national treatment, but some exceptions to the general rule are listed. These exceptions mostly refer to one of the subsectors within the general sector of the GNS list, or to restrictions that have some expiring date. In yet other instances, explicit reference is made to the horizontal section (cross-industry section) of the country's schedule. Examples of entries are: "None, except as indicated in the horizontal section (in the cross-industry commitments), or "None, except for cabotage", or "None, except companies must reinsure 20% of their risk until 1. January 2008" would fall into this category.

(3) "Bound", summarizes all partial commitments or bound limitations and thus includes all instances where specific restrictions or limitations are listed for a sector/mode of supply.

(4) "Unbound +", in a similar way as "None +" refers to entries in which countries in general are unwilling to bind a sector/mode, but include exceptions, for certain subsectors, or refer to the horizontal section of commitments.

[5]) The exact link is: http://tsdb.wto.org/wto/Public.nsf/FSetPredefinedReport3?OpenFrameSet, including all national schedules as of March 20, 2005.

(5) "Unbound", implies that no policies are bound.

In addition, they kept the records on entries of: "Unbound due to lack of technical feasibility", indicating that some mode may be irrelevant because of technological reasons.

It is important to note that – with the exception of full commitments ("none") where binding relates to free trade – the categories at hand, do not directly reflect any information on the actual restrictiveness of policy measures maintained. They were rather built on the perception that the readiness to disclose restrictions and the commitment not to further deteriorate the regulative status quo has economic value by creating benchmarks and raising transparency and predictability, no matter how restrictive the policies that are maintained. In that sense each of these categories of commitments reflects a different degree of countries' willingness to bind restrictions and can be scaled accordingly. As suggested by *Hoekman* (1995) "willingness to bind" in turn can be taken as an indicator of the relative restrictiveness of *policy regimes* pertaining to service industries. The more liberal the policy stance pursued, the more willing a government might be expected to bind policies for a sector/mode. As such, an entry of "none" reflects instances where binding relates to "free trade". Sectors/modes with a high share of "none" entries for a sector/mode across countries therefore might be interpreted as the most liberal, unregulated markets. "None+" entries are somewhat more restrictive as full commitments, however, the restrictions listed are more confined as compared to commitments classified as "bound". On the other hand, commitments classified as "unbound+" list exceptions that grant some degree of market access or national treatment, under certain conditions specified. These entries therefore reflect a somewhat higher willingness to bind and as such are less restrictive than "unbound" entries that provide for no exemptions.

With these interpretations in mind, simple frequency shares were calculated for each of the five categories by service sector, mode of supply and areas of application (market access and national treatment) by dividing the number of entries (count) across countries by the maximum possible (133, as this is the number of signatories to the GATS as of March, 2005)

With this data at hand statistical cluster analysis was applied, based on the methodology presented in *Peneder* (2001, 2003. 2005), resulting in a taxonomy of service sectors summarised in Table 2.

Table 2: The GNS Sector Classification of GATS Commitments

Cluster	***GNS***	***Name of sector***	***Mode 1***	***Mode 2***	***Mode 3***	***Mode 4***
Very liberal market access and no discrimination						
Cluster 1	1Aa	Legal services	lib/ndc	lib/ndc	reg/dsc	lib/med
Cluster 1	1Ab	Accounting, auditing and bookkeeping services	lib/ndc	lib+/ndc+	lib+/ndc	lib/med
Cluster 1	1Ad	Architectural services	lib/ndc	lib+/ndc+	lib+/ndc	lib/med
Cluster 1	1Ae	Engineering services	lib/ndc	lib+/ndc+	lib+/ndc	lib/med
Cluster 1	1Ba	Consultancy serv.ted to computer hardware	lib/ndc	lib/ndc	lib+/ndc	lib/med
Cluster 1	1Bb	Software implementation services	lib/ndc	lib/ndc	lib+/ndc	lib/med
Cluster 1	1Bc	Data processing services	lib/ndc	lib/ndc	lib+/ndc	lib/med
Cluster 1	1Bd	Database services	lib/ndc	lib/ndc	lib+/ndc	lib/med
Cluster 1	1Fc	Management consulting service	lib/ndc	lib/ndc	lib+/ndc	lib/med
Cluster 1	2Ca	Voice telephone services	bnd/ndc	lib+/ndc+	bnd	lib/med
Cluster 1	2Cb	Packet-switched data transmission services	bnd/ndc	lib+/ndc+	lib+/ndc	lib/med
Cluster 1	2Cc	Circuit-switched data transmission services	bnd/ndc	lib+/ndc+	lib+/ndc	lib/med
..uster 1	2Cd	Telex services	bnd/ndc	lib+/ndc+	lib+/ndc	lib/med
Cluster 1	2Ce	Telegraph services	bnd/ndc	lib+/ndc+	lib+/ndc	lib/med
Cluster 1	2Cf	Facsimile services	bnd/ndc	lib+/ndc+	lib+/ndc	lib/med
Cluster 1	2Cg	Private leased circuit services	bnd/ndc	lib+/ndc+	lib+/ndc	lib/med
Cluster 1	2Ch	Electronic mail	bnd/ndc	lib+/ndc+	lib+/ndc	lib/med
Cluster 1	2Ci	Voice mail	bnd/ndc	lib+/ndc+	lib+/ndc	lib/med
Cluster 1	2Cj	On-line information and database retrieval	bnd/ndc	lib+/ndc+	lib+/ndc	lib/med
Cluster 1	2Ck	Electronic data interchange	bnd/ndc	lib+/ndc+	lib+/ndc	lib/med
Cluster 1	2Cl	Enhanced/value added facsimile services	bnd/ndc	lib+/ndc+	lib+/ndc	lib/med
Cluster 1	2Cm	Code protocol conversion	bnd/ndc	lib+/ndc+	lib+/ndc	lib/med
Cluster 1	2Cn	On-line information and/or data processing	bnd/ndc	lib+/ndc+	lib+/ndc	lib/med
Cluster 1	2Co	Telecommunications: Other	bnd/ndc	lib+/ndc+	lib+/ndc	lib/med
Cluster 1	9A	Hotels and restaurants (incl. catering)	lib/ndc	lib+/ndc+	bnd	reg/med
Cluster 1	9B	Travel agencies and tour operators services	lib/ndc	lib+/ndc+	lib+/ndc	reg/med
Cluster 1	9C	Tourist guides services	med	lib/ndc	lib+/ndc	reg/med
Liberal market access and little discrimination						
Cluster 2	1Ag	Urban planning and landscape architectural services	med	lib/ndc	lib/med	med
Cluster 2	1Be	Other computer and related services	med	lib/ndc	lib/med	med
Cluster 2	1Cb	R&D services on social sciences and humanities	med	med	lib/med	med
Cluster 2	1Ec	Relating to other transport equipment	med	lib/ndc	reg/dsc	med
Cluster 2	1Ed	Relating to other machinery and equipment	med	med	lib/med	med
Cluster 2	1Fa	Advertising services	lib/ndc	lib/ndc	lib+/ndc	med
Cluster 2	1Fb	Market research, public opinion polling services	med	lib/ndc	lib/med	med
Cluster 2	1Fd	Services related to management consulting	med	med	lib/med	med
Cluster 2	1Fe	Technical testing and analysis services	med	lib/ndc	lib/med	med
Cluster 2	1Fh	Services incidental to mining	med	med	lib/med	med
Cluster 2	1Fm	Related scientific, technical consulting services	med	med	lib/med	med
Cluster 2	1Fn	Maintenance and repair of equipment	med	lib/ndc	lib/med	med
Cluster 2	2B	Courier services	med	lib/ndc	lib/med	med
Cluster 2	3A	General construction work for buildings	med	lib/ndc	lib+/ndc	lib/med
Cluster 2	3B	General construction work for civil engineering	med	lib/ndc	lib+/ndc	lib/med
Cluster 2	3C	Installation and assembly work	med	lib/ndc	reg/dsc	lib/med
Cluster 2	3D	Building completion and finishing work	med	lib/ndc	reg/dsc	med
Cluster 2	3E	Other constr. and related engineering services	med	lib/ndc	reg/dsc	med
Cluster 2	4A	Commission agents' services	med	med	lib/med	med
Cluster 2	4B	Wholesale trade services	med	lib/ndc	lib/med	med
Cluster 2	4C	Retailing services	med	lib/ndc	lib/med	med

Cluster	*GNS*	*Name of sector*	*Mode 1*	*Mode 2*	*Mode 3*	*Mode 4*
Cluster 2	4D	Franchising	med	med	lib/med	med
Cluster 2	5D	Adult education	med	med	lib/med	med
Cluster 2	6A	Sewage services	med	lib/ndc	lib/med	med
Cluster 2	6B	Refuse disposal services	med	lib/ndc	lib/med	med
Cluster 2	6C	Sanitation and similar services	med	lib/ndc	lib/med	med
Cluster 2	6D	Other environmental services	med	lib/ndc	lib/med	med
Cluster 2	10A	Entertainment services	med	med	reg/dsc	med
Cluster 2	10D	Sporting and other recreational services	med	lib/ndc	reg/dsc	med
Cluster 2	11Cd	Maintenance and repair of aircraft	med	lib/ndc	reg/dsc	med
Cluster 2	11Fa	Passenger transportation	lco	med	lib/med	med
Cluster 2	11Fb	Freight transportation	lco	med	lib/med	med
Intermediate with open market access in Mode 3						
Cluster 3	1Ai	Veterinary services	med	med	reg/dsc	med
Cluster 3	1Ca	R&D services on natural sciences	med	med	lib/med	med
Cluster 3	1Cc	Interdisciplinary R&D services	med	med	lib/med	med
Cluster 3	1Ea	Renting/leasing services: relating to ships	med	med	lco	lco
Cluster 3	1Eb	Renting/leasing services: relating to aircraft	med	med	lco	lco
Cluster 3	1Fg	Services incidental to fishing	med	med	reg/dsc	lco
Cluster 3	1Fi	Services incidental to manufacturing	med	med	lib/med	lco
Cluster 3	1Fk	Placement and supply services of personnel	med	med	lco	lco
Cluster 3	1Fo	Building-cleaning services	lco	med	lib/med	med
Cluster 3	1Fp	Photographic services	med	med	lib/med	med
Cluster 3	1Fq	Packaging services	lco	med	lib/med	med
Cluster 3	1Fr	Printing, publishing	med	med	lib/med	med
Cluster 3	1Fs	Convention services	med	med	lib/med	med
Cluster 3	1Ft	Other business services: other	med	med	lib/med	lco
Cluster 3	11Fd	Maintenance and repair of road transport equipment	lco	med	reg/dsc	med
Cluster 3	11Ha	Cargo-handling services	lco	med	lib/med	med
Cluster 3	11Hb	Storage and warehouse services	lco	lib/ndc	lib/med	med
Cluster 3	11Hc	Freight transport agency services	med	med	lib/med	med
Cluster 3	11Hd	Other services auxiliary to all modes of transport	med	med	lib/med	med
Low overall coverage						
Cluster 4	1Aj	Services provided by midwives, nurses, …	lco	lco	lco	lco
Cluster 4	1Ak	Other professional services	lco	lco	lco	lco
Cluster 4	1Da	Real estate services involving own or leased property	lco	lco	lco	lco
Cluster 4	1Db	Real estate services on a fee or contract basis	lco	med	lco	lco
Cluster 4	1Ee	Other rental/leasing services	lco	lco	lco	lco
Cluster 4	1Fj	Services incidental to energy distribution	lco	lco	lco	lco
Cluster 4	1Fl	Investigation and security	lco	lco	lco	lco
Cluster 4	2A	Postal services	lco	lco	lco	lco
Cluster 4	2Da	Motion picture/video production & distribution services	lco	lco	lco	lco
Cluster 4	2Db	Motion picture projection services	lco	lco	lco	lco
Cluster 4	2Dc	Radio and television services	lco	lco	lco	lco
Cluster 4	2Dd	Radio and television transmission services	lco	lco	lco	lco
Cluster 4	2De	Sound recording	lco	lco	lco	lco
Cluster 4	2Df	Other audiovisual services	lco	lco	lco	lco
Cluster 4	4E	Other distribution services	lco	lco	lco	lco
Cluster 4	5E	Other education services	lco	lco	lco	lco
Cluster 4	7C	Other financial services	lco	lco	lco	lco
Cluster 4	8B	Other human health services	lco	lco	lco	lco
Cluster 4	8C	Social services	lco	lco	lco	lco

Cluster	*GNS*	*Name of sector*	*Mode 1*	*Mode 2*	*Mode 3*	*Mode 4*
Cluster 4	8D	Other health related and social services	lco	lco	lco	lco
Cluster 4	9D	Other tourism and travel related services	lco	lco	lco	lco
Cluster 4	10B	News agency services	lco	med	lco	lco
Cluster 4	10C	Libraries, archives, museums and other cultural services	lco	lco	lco	lco
Cluster 4	10E	Other recreational, cultural and sporting services	lco	lco	lco	lco
Cluster 4	11Ac	Rental of vessels with crew	lco	lco	lco	lco
Cluster 4	11Ad	Maintenance and repair of vessels	lco	lco	lco	lco
Cluster 4	11Ae	Pushing and towing services	lco	lco	lco	lco
Cluster 4	11Af	Supporting services for maritime transport	lco	lco	lco	lco
Cluster 4	11Ba	Passenger transportation	lco	lco	lco	lco
Cluster 4	11Bb	Freight transportation	lco	lco	lco	lco
Cluster 4	11Bc	Rental of vessels with crew	lco	lco	lco	lco
Cluster 4	11Bd	Maintenance and repair of vessels	lco	lco	lco	lco
Cluster 4	11Be	Pushing and towing services	lco	lco	lco	lco
Cluster 4	11Bf	Supporting services for internal waterways transport	lco	lco	lco	lco
Cluster 4	11Ca	Air transport - passenger transportation	lco	lco	lco	lco
Cluster 4	11Cb	Air transport - freight transportation	lco	lco	lco	lco
Cluster 4	11Cc	Rental of aircraft with crew	lco	lco	lco	lco
Cluster 4	11D	Space transport	lco	lco	lco	lco
Cluster 4	11Ea	Rail transport - passenger transportation	lco	lco	lco	lco
Cluster 4	11Eb	Rail transport - freight transportation	lco	lco	lco	lco
Cluster 4	11Ec	Rail transport - pushing and towing services	lco	lco	lco	lco
Cluster 4	11Ed	Maintenance and repair of rail transport equipment	lco	med	lco	lco
Cluster 4	11Ee	Supporting services for rail transport services	lco	lco	lco	lco
Cluster 4	11Fc	Rental of commercial vehicles with operator	lco	lco	lco	lco
Cluster 4	11Fe	Supporting services for road transport services	lco	lco	lco	lco
Cluster 4	11Ga	Transportation of fuels	lco	lco	lco	lco
Cluster 4	11Gb	Transportation of other goods	lco	lco	lco	lco
Cluster 4	11I	Other transport services	lco	lco	lco	lco
Cluster 4	12	Other services not included elsewhere	lco	lco	lco	lco
Intermediate, but mostly unbound on Mode 3						
Cluster 5	1Ac	Taxation services	med	lib/ndc	lib/med	med
Cluster 5	1Af	Integrated engineering services	med	med	reg/dsc	med
Cluster 5	1Ff	Services incidental to agriculture, hunting and forestry	med	lib/ndc	reg/dsc	med
Cluster 5	5A	Primary education services	med	med	reg/dsc	med
Cluster 5	5B	Secondary education services	med	med	reg/dsc	med
Cluster 5	5C	Higher education services	med	med	reg/dsc	med
Cluster 5	11Aa	Maritime transport services - passenger transportation	med	med	reg/dsc	med
Cluster 5	11Ab	Maritime transport services - freight transportation	med	med	reg/dsc	med
Cluster 5	11Ce	Supporting services for air transport	med	lib/ndc	reg/dsc	med
Strongly regulated (with partial commitments on Mode 3)						
Cluster 6	1Ah	Medical and dental services	med	lib/ndc	reg/dsc	med
Cluster 6	7Aa	Life, accident and health insurance services	reg/dsc	reg/dsc	bnd	reg/med
Cluster 6	7Ab	Non-life insurance services	reg/dsc	reg/dsc	bnd	reg/med
Cluster 6	7Ac	Reinsurance and retrocession	bnd/ndc	reg/dsc	bnd	reg/med
Cluster 6	7Ad	Services auxiliary to insurance	reg/dsc	reg/dsc	bnd	reg/med
Cluster 6	7Ba	Accept. deposits/repayable funds from public	reg/dsc	reg/dsc	bnd	reg/med

Cluster	*GNS*	*Name of sector*	*Mode 1*	*Mode 2*	*Mode 3*	*Mode 4*
Cluster 6	7Bb	Lending of all types	reg/dsc	reg/dsc	bnd	reg/med
Cluster 6	7Bc	Financial leasing	reg/dsc	reg/dsc	bnd	reg/med
Cluster 6	7Bd	All payment and money transmission services	reg/dsc	reg/dsc	bnd	reg/med
Cluster 6	7Be	Guarantees and commitments	reg/dsc	reg/dsc	bnd	reg/med
Cluster 6	7Bf	Trading for own account or for account of customers	reg/dsc	reg/dsc	bnd	reg/med
Cluster 6	7Bg	Participation in issues of all kinds of securities	reg/dsc	reg/dsc	bnd	lib/med
Cluster 6	7Bh	Money broking	med	reg/dsc	bnd	lib/med
Cluster 6	7Bi	Asset management, such as cash or portfolio management	reg/dsc	reg/dsc	bnd	reg/med
Cluster 6	7Bj	Settlement and clearing services for financial assets	reg/dsc	reg/dsc	bnd	lib/med
Cluster 6	7Bk	Other auxiliary financial services	reg/dsc	reg/dsc	bnd	reg/med
Cluster 6	7Bl	Provision of financial information, related software	reg/dsc	reg/dsc	bnd	reg/med
Cluster 6	8A	Hospital services	med	med	reg/dsc	med

lib+/ndc…….very liberal market access, no discrimination
lib/med……..liberal market access, intermediate discromination
med………....intermediate market access
bnd………….bound market access
reg/med……no commitment, intermediate discrimination
lco…………..low coverage
reg/dsc……..no commitment, discrimination

Source: Wolfmayr – Peneder - Schöberl (2005).

Across all the four modes, *Cluster 1* is the group of sectors with the most liberal regimes in terms of both market access and national treatment. Typical examples are the various business related services, such as "accounting, auditing and bookkeeping", "engineering services", and a number of services related to information and communication technologies (ICT). *Cluster 2* is comprised of sectors with a relatively liberal regime with little discrimination, especially with respect to modes 2 and 3, while taking an intermediate position in modes 1 and 4. Examples are "advertising" and "market research", "scientific and technical consulting", construction, or wholesale and retail trade. A relatively small group of sectors with mostly intermediate values but a pronounced liberal market access in mode 3 is to be found in *Cluster 3*. Examples are "R&D services on natural sciences", "services incidental to manufacturing", "printing and publishing", or "cargo-handling services". Conversely, *Cluster 5* is much more restricted in terms of market access and discriminating in terms of national treatment for mode 3, but otherwise also takes an intermediate position. The most outstanding examples within this class are "primary", "secondary", and "higher education".

The most characteristic observation on industries within *Cluster 4* is their low overall coverage within the GATS system. As argued before, a low overall coverage indicates a certain reluctance to include these sectors in the GATS process. In the case of Cluster 4, the share of countries with "no commitment" is generally much higher than the share of countries with "full commitment". Typical examples are sectors such as "services incidental to energy distribution", "postal services", "radio and television", and a number of transport services. Similarly, *Cluster 6* is comprised of sectors with rather restrictive regulatory regimes, albeit with a pronounced tendency for an explicit non-commitment to liberalisation. Within this type industries such as "medical and dental services", "hospital services", and a number of insurance and other finance related services were identified.

3. Analysis along different service sector taxonomies

The detailed examination of the performance and the competitiveness of the Austrian service sectors will not only be done along the official statistical classification scheme (NACE-codes). We will additionally look at the data though the lens of several industry classifications reflecting different structural features that might be relevant for the sectors' export potential and competitiveness. We will impose four different taxonomies of service industries on the performance data and thus group the data according to regulatory regimes, intrinsic tradability, skill intensity and factor intensities. These industry types are summarised in Table 3.

Table 3: Service industry classifications

		Favourable/ unfavourable sector characteristics
Taxonomy 1: GATS - regulatory regimes	Very liberal market access and no discrimination	
(overall classification)	Liberal market access and little discrimination	
(Wolfmayr -Peneder - Schöberl, 2005)	Intermediate with open market access in mode 3	
	Intermediate, but mostly unbound on mode 3	
	Low overall coverage	
	Strongly regulated market access (partial commitments on Mode 3)	
Taxonomy 2: GATS mode 3 classification	Full commitment (+)/ No discrimination	
(Wolfmayr -Peneder - Schöberl, 2005)	Full commitment / Intermediate discrimination	
	Partial commitment	
	Low coverage	
	No commitment / discriminating	
Taxonomy 3: GATS mode 4 classification	Full commitment / Intermediate discrimination	
(Wolfmayr -Peneder - Schöberl, 2005)	Intermediate	
	Low coverage	
	No commitment / Intermediate discrimination	
Taxonomy 4: Tradability	International markets	
(Mayerhofer - Palme, 2001)	Regional markets	
Taxonomy 5: Skill requirements	Low skill	-
(Mayerhofer - Palme, 2001)	Professional, vocational training	0
	Higher degree of education	+
	Highest degree of education	+
Taxonomy 6: Factor intesities	Other industries	0
(Mayerhofer - Palme, 2001)	Labour-intensive industries (low-skilled labour)	-
	Labour-intensive industries (high-skilled labour)	+
	Capital-intensive industries	0
	Software-intensive industries	+

All of the taxonomies were developed by statistical cluster analysis. Detailed information on the taxonomies related to tradability, skill and factor intensity, the data sources and the methodologies are presented in *Mayerhofer – Palme* (2001). Apart from the taxonomy on regulatory regimes derived from GATS, all other classifications are based on sector data at the Nace 3-digit industry classification. As a matter of fact, the lack of concordance between the services sector classification system in the GATS (GNS/W/120) and the classification according to the European NACE nomenclature has been a major problem facing the empirical analysis of services so far. In this paper, we are able to employ detailed correspondence tables between the WTO GNS/W/120 list of sectors, version 1.0 of the Central Product Classification, and the NACE classification of industries, which were created at WIFO. This brings us into a position to be able to combine the different taxonomies and to link the new taxonomy based on the GATS schedules to other data sources on services classified according to NACE.

A detailed description of Taxonomy 1-3, grouping industries according to regulatory regimes has been given in the previous chapter.

Taxonomy 4 splits industries according to their intrinsic tradability or geographical market range which depends on the specific characteristics of the service. Personal or bound services need face-to-face contact, involve high levels of personal trust or depend on location-specific attributes (producer services) and are thus bound to a regional market. "Impersonal", unbound services have more in common with manufactured goods, do not essentially need the proximity to consumers and can more easily be delivered with electronic commerce. Data limitations and the lack of concordance in statistical classifications have so far impeded a classification of services on the basis of measured trade intensity. In contrast to most "ad hoc" assignments in the literature so far (*Bhagwati*, 1984; *Sapir*, 1993), however, Taxonomy 2 is based on a quantitative indicator measuring regional concentration across service sectors. For sectors exhibiting high regional concentration it must be economically meaningful to locate in only a few locations. These kinds of services are therefore also more easily deliverable across space and thus tradable. Activities which require direct interaction with consumers and consequently a high degree of coincidence of consumption and production will more likely be spread more evenly across space. Low regional concentration thus reflects lower tradability and the service activity is confined to deliveries in the local / regional market.[6])

Taxonomy 5 is based on a special evaluation of the data from the Austrian micro-census, providing information at the disaggregated industry level regarding the skill structure (the highest degree of education attained by each sector) of the labour force.

[6]) This ignores demand as a potentially influencing factor. In some instances, demand could be concentrated in specific locations (e.g. cities) so that a high regional concentration is due to a clustering of demand and would not indicate high tradability per se.

Taxonomy 6 classifies service sector on the basis of information provided by the structural business statistics, according to their typical input ratios (factor intensities) within the production process.

As competition from low cost countries increases worldwide, high wage countries are forced to compete in quality rather than prices, to mitigate the pressures on the cost side and stay competitive. This in turn may only be achieved by better skilled labour, more sophisticated inputs, superior organisation, R&D and, particularly important for service sectors, knowledge and information. Depending on the skill and factor intensities, industries differ in the relative importance of quality and price competition. A high skill and knowledge intensity will clearly indicate the most preferable industry characteristics from the viewpoint of a high wage country like Austria, as quality competition dominates in these sectors. On the other hand, a low skilled labour intensity indicates a high vulnerability to price competition from low-wage countries and will signal the most unfavourable sector characteristic.

Table 4 and table 5 combine the different taxonomies along these premises. Tradable sectors are ordered by regulatory regime (liberal to most restrictive), the skill intensity and factor intensity. While mode 1 is relevant, the other modes, especially mode 3 and mode 4 are also important. Thus within the tradable sectors the sorting refers to the general taxonomy across modes. On the other hand, non-tradable sectors, are ordered by regulatory regimes in mode 3 ("foreign direct investment") and mode 4 ("movement of persons"), since these are the modes of international delivery most likely to be relevant for personal or bound services. As in the tradable sectors we further distinguish between different skill and factor intensities. The tables indicates a "+" for advantageous sector characteristics according to skills and factors used, a "-" indicates unfavourable sector characteristics, while "0" stands for a neutral position.

This new "combined" classification of service industries will be the raster to be imposed on the detailed performance data and other structural information based on employment, production, wages and trade figures from the structural business statistics and the Austrian value added tax statistic. The analysis will also cover research into firm entry data from the Austrian social security files, as newly created firms decisively contribute to the regeneration and modernisation of a location's technological, managerial and entrepreneurial resources. They foster structural change, increase the competitive pressure, contribute to greater product differentiation and increase the diversity and quality of available products and services. A closer look at firm entries in the services sectors will thus illustrate the strength of structural change within service sectors and the direction of structural change across sectors. In this way we should be able to identify the major patterns of specialisation as well as the relative competitive strengths and weaknesses of the Austrian service sector vis-à-vis other European countries.

Table 4: Internationally tradable sectors, sector characteristics and trade regimes according to GATS commitments

NACE	NACE description	Sector characteristics		GATS-trade regimes
		Skill int.	Factor int.	
Interationally tradable sectors, with favourable sector characteristics				
514	Wholesale of household goods	+	+	
516	Wholesale of machinery, equipment and supplies	+	+	
726	Other computer related activities	+	+	
515	Wholesale of non-agricultural intermediate products, waste and scrap	+	0	
517	Other wholesale	+	0	
Interationally tradable, very liberal market access				
721	Hardware consultancy	+	+	lib+/ndc
722	Software consultancy and supply	+	+	lib+/ndc
723	Data processing	+	+	lib+/ndc
724	Data base activities	+	+	lib+/ndc
551	Hotels	-	0	lib+/ndc
552	Camping sites and other provision of short-stay accommodation	-	0	lib+/ndc
Interationally tradable, liberal market access				
742	Architectural and engineering activities and related technical consultancy	+	+	lib/ndc
713	Renting of other machinery and equipment	+	0	lib/ndc
732	Research and experimental developm. on social sciences and humanities	+	0	lib/ndc
451	Site preparation	0	0	lib/ndc
455	Renting of construction or demolition equipment with operator	0	0	lib/ndc
512	Wholesale of agricultural raw materials and live animals	0	-	lib/ndc
526	Retail sale not in stores	-	+	lib/ndc
513	Wholesale of food, beverages and tobacco	-	-	lib/ndc
Interationally tradable, medium regulated market access				
634	Activities of other transport agencies	+	+	med/libmode3
731	Research and experimental developm. on natural sciences, engineering	+	+	med/libmode3
711	Renting of automobiles	+	0	med/libmode3
712	Renting of other transport equipment	+	0	med/libmode3
632	Other supporting transport activities	0	+	med/libmode3
631	Cargo handling and storage	0	0	med/libmode3
745	Labor recruitment and provision of personnel	0	-	med/libmode3
Interationally tradable, with low coverage or strongly regulated market access				
622	Non-scheduled air transport	+	+	loc
621	Scheduled air transport	+	0	loc
701	Real estate activities with own property	+	0	loc
623	Space transport	+	0	loc
603	Transport via pipelines	0	+	loc
612	Inland water transport	0	+	loc
611	Sea and coastal water transport	0	0	loc
651	Monetary intermediation	+	+	strongly reg.
671	Acivities auxiliary to financial intermed. exc. insurance and pension funding	+	+	strongly reg.
652	Other financial intermediation	+	0	strongly reg.

lib+/ndc…………..very liberal market access, no discrimination
lib/ndc……………..liberal market access, little discrimination
med/libmode3…..intermediate with open market access in mode 3
lco…………………low coverage
reg………………..strongly regulated market access
+………..…...……..favourable sector characteristics
-………..…….……unfavourable sector characteristics
0…………..…...….neutral

Table 5: Sectors with low intrinsic tradability, sector characteristics and trade regimes in mode 3 and mode 4 according to GATS commitments

NACE	NACE description	Sector charac teristics		Trade regimes	
		Skill int.	Factor int.	Mode 3	Mode 4
Low intrinsic tradability, liberal in mode 3 and mode 4					
642	Telecommunications	+	0	lib+/ndc	lib/med
744	Advertising	+	0	lib+/ndc	med
452	Building of complete constructions or parts thereof; civil engineering	0	-	lib+/ndc	lib/med
501	Sale of motor vehicles	+	+	lib/med	med
633	Activities of travel agencies and tour operators; tourist assist. activ.n. e. c.	+	+	lib/med	med
743	Technical testing and analysis	+	+	lib/med	med
741	Legal, accounting, book-keeping and auditing activ., tax consult.	+	+	lib/med	med
525	Retail sale of second-hand goods in stores	+	0	lib/med	med
503	Sale of motor vehicles parts and accessories	0	0	lib/med	med
504	Sale, maintenance, repair of motorcycles and related parts and access	0	0	lib/med	med
511	Wholesale on a fee or contract basis	0	0	lib/med	med
522	Retail sale of food, beverages and tobacco in specialized stores	0	0	lib/med	med
505	Retail sale of automotive fuel	0	-	lib/med	med
521	Retail sale in non-specialized stores	0	-	lib/med	med
524	Other retail sale of new goods in specialized stores	0	-	lib/med	med
527	Repair of personal and household goods	0	-	lib/med	med
725	Maintenance, repair of office, accounting, computing machinery	0	-	lib/med	med
746	Investigation and security activities	0	-	lib/med	med
748	Miscellaneous business activities n. e. c.	-	+	lib/med	med
602	Other land transport	-	0	lib/med	med
523	Retail sale of pharmaceutical and medical goods, cosmetic, toilet artic.	-	-	lib/med	med
747	Industrial cleaning	-	-	lib/med	med
Low intrinsic tradability, medium regulation in mode 3 and strong regulation in mode 4					
660	Insurance and pension funding, except compulsory social security	+	+	bnd	reg/med
672	Activities auxiliary to insurance and pension funding	+	+	bnd	reg/med
554	Bars	0	0	bnd	reg/med
555	Canteens and catering	0	-	bnd	reg/med
553	Restaurants	-	-	bnd	reg/med
Low intrinsic tradability, strong regulation in mode 3 and moderate regulation in mode 4					
453	Building installation	0	-	reg/dsc	lib/med
454	Building completion	0	-	reg/dsc	med
502	Maintenance and repair of motor vehicles	0	-	reg/dsc	med
641	Post and courier activities	0	0	lib/bnd//lco	med/reg
Low intrinsic tradability, low coverage in mode 3 and mode 4					
601	Transport via railways	0	0	lco	lco
702	Letting of own property	0	0	lco	lco
714	Renting of personal and household goods n. e. c.	0	0	lco	lco
703	Real estate activities on a fee or contract basis	-	0	lco	lco

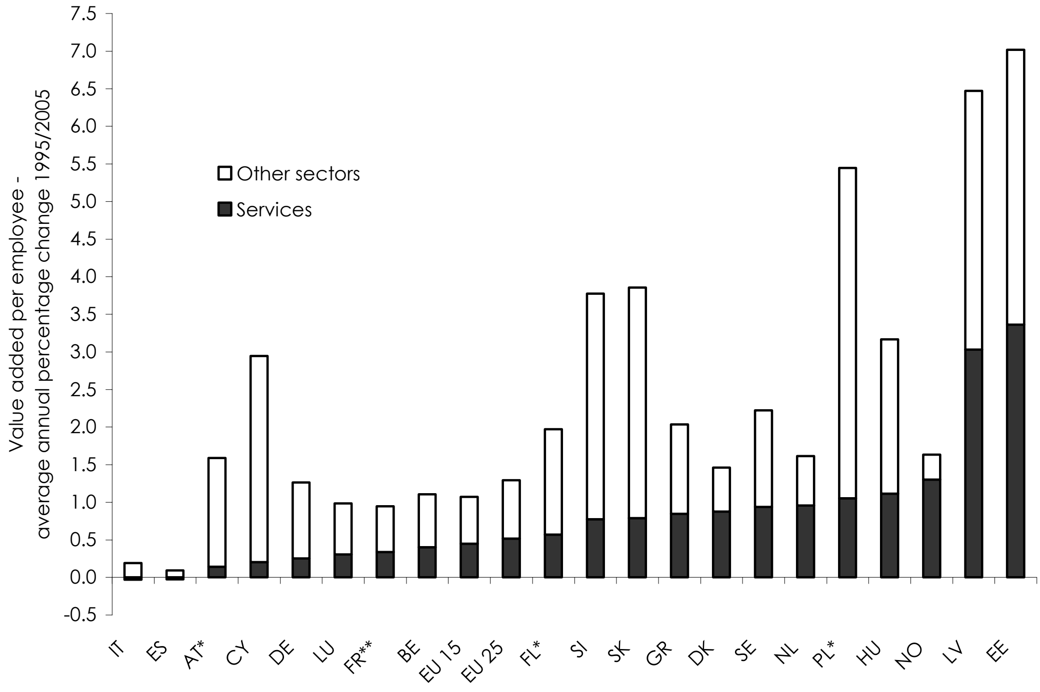
lib+/ndc…....very liberal market access, no discrimination
lib/med….....liberal market access, intermediate discromination
med…..…....intermediate market access
bnd………...bound market access
reg/med……no commitment, intermediate discrimination
lco………..…low coverage
reg/dsc…..…no commitment, discrimination
+……………..favourable sector characteristics
-……….……unfavourable sector characteristics
0………...….neutral

4. A first overview

Before we go into the more detailed sector analysis this chapter will present some of the main trends and structural features in the Austrian service sector along the main dimensions of the various clusters reviewed in the previous section.

Firstly, figure 1 confirms the notion that the service sector is increasingly contributing to overall productivity growth. The adoption of Information and Communication Technologies (ICT) and the digitalisation of services increase the scope for product innovations and highly facilitate process innovations pushing efficiency in the services sectors. Thus, the traditional picture of the services as a stagnating sector with low innovation orientation and limited potentials for productivity increases is outdated (*Wölfl*, 2005). Almost half of the total productivity increase in the EU15 in the period 1995 – 2004 (1.1% p.a.) has been accounted for by the services sector. The Netherlands, Denmark and Norway are examples of countries where the tertiary sector has contributed more than any other sector. While we find a respectable overall productivity increase in Austria (+1.6% p.a.) over the considered period, it is the manufacturing sector that contributed most. Indeed the contribution of services is one of the lowest among the countries compared. This result might be due to a general lag in productivity of individual services sectors, but could also be ascribed to structural features of the Austrian service sector such as a relatively strong reliance on traditional, mainly low-skilled labour intensive sectors with a more limited potential for productivity increases. This suggests that there is still wide scope for efficiency-enhancing measures as well as structural change in the Austrian service sector.

Figure 1: Productivity growth in the services and manufacturing sectors



Source: Wolfmayr et al. (2006). - * = 1995/2004. ** = 1999/2004.

Table 6 and 7 summarize the main structural and performance indicators along trade regimes and sector characteristics in terms of factor intensities. The Austrian service sector is compared to a reference group of nine European countries for which data at the highly disaggregated sector level is available[7]). Unfortunately there is a lack of data, or very poor quality of the data on financial and insurance services for most of the countries in the reference group, so that for a proper comparison at the aggregated level of tables 6 and 7 we had to exclude these services from the calculations. This is mainly to affect the group of sectors with medium and strongly regulated market access and advantageous sector characteristics[8]). We will include financial and insurance services in the analysis at the more detailed sector level in the next section, however.

[7]) The countries are: Belgium, Germany, Denmark, Finland, France, Italy, Norway, Sweden and the UK.

[8]) Insurance (Nace 660) and activities auxiliary to financial intermediation (670) belong to the group of sectors characterized by medium market access regulations and advantageous sector characteritics. They account for 2.2 percent of total service sector employment in Austria (3.7 percent of value added). Financial intermediation (660) belongs to the strongly regulated sectors with favourable sector characteristics and accounts for an employment share of about 4 percent (11 percent value added share).

The bulk of service activity is concentrated in sectors facing liberal trade regimes which account for roughly 60 percent of employment and production. Within the group of liberal sectors, by far the most important sectors are those characterized by low intrinsic tradability with a value added share of 43 percent and an employment share of 48 percent. Internationalisation of such sectors will be driven by foreign direct investments (mode 3) or the temporary movement of service providers (mode 4).

Table 6: Structural characteristics of services by trade regime and sector characteristic, 2004

	Value added share	Employ-ment share	Produc-tivity	Unit labour costs	Share in employment of newly entered firms[1])	Share in number of newly entered firms[1])
	As percent		1.000 €		As percent	
Liberal market access						
Favourable sector characteristics						
AT	20.8	15.5	61.6	56.8	14.8	15.8
Europe	26.9	17.7	69.3	54.7	.	.
Neutral sector characteristics						
AT	3.1	3.5	41.0	55.7	5.7	7.9
Europe	3.2	3.7	39.2	46.9	.	.
Unfavourable sector characteristics						
AT	34.5	44.2	35.7	69.7	43.5	33.7
Europe	30.4	41.4	33.4	65.1	.	.
Total						
AT	58.4	63.1	42.3	64.3	64.0	57.4
Europe	60.5	62.7	43.9	59.5	.	.
Medium regulated market access						
Favourable sector characteristics						
AT	5.0	2.1	107.1	42.0	3.2	3.9
Europe	5.6	3.4	75.4	51.1	.	.
Neutral sector characteristics						
AT	1.6	1.8	40.8	83.6	0.2	0.3
Europe	2.0	2.5	37.1	84.2	.	.
Unfavourable sector characteristics						
AT	12.7	19.2	30.4	75.6	22.9	25.8
Europe	11.8	19.6	27.6	68.4	.	.
Total						
AT	19.3	23.1	38.2	67.6	26.3	30.0
Europe	19.5	25.4	34.9	65.0	.	.
Strongly regulated market access						
Favourable sector characteristics						
AT	0.8	0.5	72.2	83.1	1.3	0.5
Europe	1.8	0.8	100.1	55.8	.	.
Neutral sector characteristics						
AT	9.8	5.2	85.9	41.6	4.3	8.1
Europe	8.2	4.1	91.2	29.5	.	.
Unfavourable sector characteristics						
AT						
Europe						
Total						
AT	10.7	5.8	84.7	44.8	5.6	8.6
Europe	10.0	4.9	92.7	34.2	.	.
Not attributable (wholsale)						
Favourable sector characteristics						
AT	11.6	8.0	66.3	62.8	4.1	4.0
Europe	10.0	6.9	65.6	58.2	.	.
Total						
Favourable sector characteristics						
AT	38.2	26.1	66.9	57.2	23.4	24.2
Europe	44.4	28.8	70.0	55.1	.	.
Neutral sector characteristics						
AT	14.6	10.6	63.2	49.3	10.2	16.3
Europe	13.4	10.2	59.4	41.8	.	.
Unfavourable sector characteristics						
AT	47.2	63.3	34.1	71.3	66.4	59.5
Europe	42.2	60.9	31.5	66.0	.	.
Total						
AT	100.0	100.0	45.7	62.7	100.0	100.0
Europe	100.0	100.0	55.5	57.9	.	.

Source: ST.AT, Eurostat, Austrian social security files, own calculations. - Note: Figures do not include data on insurance (medium regulated market access) and financial intermediation (strongly regulated market access) due to missing data. - 1) Ø 2001/2003.

Across trade and regulatory regimes value added shares are about equal to the shares of the average European country in the sample. However, the table points to some interesting differences in the specialization according to factor intensities of the service sectors. The Austrian share of sectors with advantageous characteristics in terms of skill intensity and type of factor inputs is clearly below the European average, in general, but in sectors facing a liberal trade regime, in specific. This difference is less pronounced in terms of employment shares. Table 6 also displays figures on the share of each service group in the total number and in the total employment generated by firm entries. The bulk of firm entries occur in sectors with open trade regimes, however, across trade regimes, most of the entries concentrate on sectors with unfavourable sector characteristics. From table 7 we also find that there is no strong movement out of those sectors. Indeed, while value added growth points to some structural improvements towards the skill and knowledge intensive service sectors, figures on employment as well as firm entries reveal the opposite. These results reflect the still dominant role of such sectors as tourism, transports as well as building services in total value added of the services sector as well as new establishments of firms.

Competitiveness as reflected by a comparison of productivity as well as unit labour costs is strongest in sectors facing a medium restrictive trade regime. This is especially true for the skill intensive group of services within this cluster, which was able to strongly improve its position since 2000[9]). On the other hand, sectors confronted with the most limited market access conditions are at a clear competitive disadvantage against other European countries. Within the latter group, a comparison to 2000 reveals a clear loss in competitiveness in sectors exhibiting advantageous sector characteristics, but an improvement in services with neutral factor characteristics[10]). Within the group of liberal service sectors, we find a productivity gap in the sectors with advantageous characteristics, but a fairly good comparative unit labour cost position. Additionally, these sectors were able to improve their position, by narrowing the productivity gap. On the other hand, sectors with neutral and unfavourable sector characteristics within the liberal service sector group exhibit a pretty good relative productivity performance, while the unit labour cost position is clearly unfavourable. Since liberal sectors hold the highest share in employment and value added this latter result carries over to the general picture: advantageous sectors exhibit lower productivity but a good labour cost position, disadvantaged and neutral sectors display higher productivity and a bad labour cost position.

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[9]) Data from the EUKLEMS database reveal a good competitive position for the Austrian insurance sector in comparison to a reference group of countries comprising Germany, Finland, France, Italy and the Netherlands, which deteriorated over the period 2000-2004, however.

[10]) Again, using data from the EUKLEMS database for a limited set of comparison countries (see footnote 7) reveals that the inclusion of the financial sector as a field of activity with advantageous sector characteristics and medium regulated market access would not change this conclusion. This data reveals an unfavourable competitive position for the financial sector, which has been worsening over time.

Table 7: Development of structural characteristics and performance indicators by trade regime and sector characteristic of services, 2000 - 2004

	Value added	Employ-ment	Unit labour costs	Produc-tivity	Value added share	Employ-ment share	Share in employment of newly entered firms[1])	Share in number of newly entered firms[1])
	Average annual percentage change				Change in percentage points			
Liberal market access								
Favourable sector characteristics								
AT	8.9	4.3	-2.1	4.5	2.4	1.0	0.2	-0.2
Europe	4.3	2.0	0.3	2.3	0.3	0.3	.	.
Neutral sector characteristics								
AT	6.0	4.9	0.4	1.1	0.1	0.3	-0.9	-0.5
Europe	3.9	-0.4	-0.6	4.3	-0.01	-0.29	.	.
Unfavourable sector characteristics								
AT	4.2	2.2	-0.5	1.9	-1.9	-0.6	7.0	0.0
Europe	3.4	1.5	0.1	1.8	-0.7	0.0	.	.
Total								
AT	5.8	2.9	-1.1	2.9	0.5	0.7	6.3	-0.7
Europe	3.8	1.5	0.1	2.2	-0.4	0.0	.	.
Medium regulated market access								
Favourable sector characteristics								
AT	10.8	6.0	-2.6	4.5	0.9	0.3	-1.8	0.0
Europe	8.6	5.7	0.1	2.8	0.9	0.5	.	.
Neutral sector characteristics								
AT	-2.1	-5.5	-1.8	3.6	-0.6	-0.7	-4.7	0.0
Europe	2.0	0.6	-1.0	1.4	-0.2	-0.1	.	.
Unfavourable sector characteristics								
AT	4.7	3.8	1.7	0.8	-0.5	0.9	0.3	0.5
Europe	3.1	1.6	-0.4	1.4	-0.4	0.0	.	.
Total								
AT	5.4	3.1	-0.1	2.2	-0.2	0.5	-6.2	0.6
Europe	4.4	2.1	-0.7	2.3	0.3	0.6	.	.
Strongly regulated market access								
Favourable sector characteristics								
AT	2.7	-0.8	2.3	3.5	-0.1	-0.1	0.8	-0.1
Europe	7.4	0.9	-2.8	6.4	0.2	0.0	.	.
Neutral sector characteristics								
AT	9.3	1.9	-6.2	7.3	1.3	-0.2	0.7	1.7
Europe	5.0	2.0	-2.3	2.9	0.3	0.1	.	.
Unfavourable sector characteristics								
AT	.	.	.	.	.	.	.	.
Europe	.	.	.	.	.	.	.	.
Total								
AT	8.7	1.6	-5.4	7.0	1.2	-0.2	1.5	1.7
Europe	5.4	1.8	-2.2	3.5	0.5	0.1	.	.
Not attributable (wholesale)								
Favourable sector characteristics								
AT	2.3	-0.1	-1.0	2.4	-1.6	-0.9	-1.6	-1.5
Europe	3.0	0.2	-0.7	2.8	-0.4	-0.4	.	.
Total								
Favourable sector characteristics								
AT	6.7	2.8	-1.9	3.8	1.6	0.3	-2.4	-1.7
Europe	4.6	1.9	-0.1	2.7	1.0	0.4	.	.
Neutral sector characteristics								
AT	7.0	1.3	-4.7	5.6	0.8	-0.6	-4.9	1.2
Europe	4.3	0.8	-1.9	3.5	0.1	-0.3	.	.
Unfavourable sector characteristics								
AT	4.3	2.7	0.1	1.5	-2.4	0.3	7.3	0.5
Europe	3.3	1.5	0.0	1.7	-1.2	-0.1	.	.
Total								
AT	5.6	2.6	-1.3	2.9	.	.	.	.
Europe	4.0	1.5	-0.3	2.4	.	.	.	.

Source: ST.AT, Eurostat, Austrian social security files, own calculations. - Note: Figures do not include data on insurance (medium regulated market access) and financial intermediation (strongly regulated market access) due to missing data. - 1) Ø1998-2000/Ø2001-2003.

Table 8 summarizes data on Austrian services exports that was taken from the value-added tax statistic published by Statistics Austria. While this data is not comparable to the quality of trade statistics it is the only source of information on exports at the very detailed sector level and a good indicator to reflect main tendencies in exports. Sectors facing liberal trade regimes are clearly the most intensive exporters, exhibiting the highest shares of exports in total sales. They account for almost 50% of total exports. Cross-border exporting activity is very low in the rest of the sectors, facing more restrictive and discriminatory market access regulations. The group of sectors which is not attributable to a specific trade regime consists mostly of wholesale service activities, which explains the exceptionally high share of exports in sales of that group.

Table 8: Austrian service exports - structure and development

	Export share in sales	Export share in service exports	Export share in service exports		Export	
	2004	2004	95/04	00/04	95/04	00/04
	As percent		Change in percentage points		Average annual percentage	
Liberal market access						
Favourable sector characteristics	7.61	19.18	-8.01	3.66	2.54	12.88
Neutral sector characteristics	6.57	2.62	0.07	-0.59	6.89	1.78
Unfavourable sector characteristics	6.32	27.35	6.66	3.19	9.95	10.43
Total	6.78	49.15	-1.29	6.26	6.27	10.73
Medium regulated market access						
Favourable sector characteristics	3.04	2.00	-0.03	0.13	6.43	8.92
Neutral sector characteristics	0.47	0.07	0.03	0.05	14.91	45.18
Unfavourable sector characteristics	1.33	1.16	0.03	-0.52	6.91	-2.40
Total	1.93	3.22	0.04	-0.34	6.72	4.42
Strongly regulated market access						
Favourable sector characteristics	0.69	0.08	-0.20	-0.15	-7.29	-18.21
Neutral sector characteristics	2.30	1.98	1.02	0.03	15.55	7.42
Unfavourable sector characteristics						
Total	2.11	2.06	0.82	-0.13	12.80	5.46
Not attributable (wholesale)						
Favourable sector characteristics	16.33	45.57	0.70	-5.80	6.78	3.97
Total						
Favourable sector characteristics (incl. wholesale)	10.98	66.83	-7.54	-2.16	5.37	6.20
Favourable sector characteristics (excl. wholesale)	6.45	21.26	-8.32	3.64	2.87	11.96
Neutral sector characteristics	3.33	4.67	1.12	-0.51	9.90	4.30
Unfavourable sector characteristics	5.49	28.51	6.69	2.67	9.81	9.73
Total	2.58	100.00	-	-	6.66	7.05

Source: ST.AT Statistics on Value Added Tax. - Note: Figures do not include data on insurance (medium regulated market access) and financial intermediation (strongly regulated market access) due to missing data.

The export structure is clearly biased towards low-skilled intensive service sectors. This is especially true for the group of sectors facing liberal trade regimes which account for almost

30% of total exports. Furthermore, advantageous sectors lost in importance over the period 1995-2004, although there seems to be a slight turnaround in the growth dynamics since 2000, as growth is overtaking that of the other sector types. Thus, export figures confirm the picture already drawn by the structural indicators on production and employment, of a rather strong specialisation in low-skilled intensive sectors and rather slow structural change across sectors.

5. A more detailed sector analysis

In this section we will have a more detailed look at the individual service sectors. Again, we will structure the analysis according to the relative status of trade impeding regulations prevailing in the various service sectors, their skill and factor intensities and their intrinsic tradability. This seems important since different factors might be relevant for competitiveness and the exploitation of international market potentials across the different trade regimes and sector characteristics. This in turn might lead to different implications for economic policy. Administrative burdens are likely to play a lesser role in sectors already facing liberal market access conditions and the main policy focus will have to be put on setting the basic conditions and measures that foster efficiency enhancing innovations to raise productivity and international competitiveness and to set actions to accelerate and facilitate new firm entries in order to speed up the positive structural change within and across sectors toward the more knowledge and skill intensive activities.

Sectors facing medium regulated as well as highly regulated international market access conditions will call for a more direct role of economic policy to allow for better exploitation of market potentials. Measures fostering the efficiency and competitiveness of the service sectors will have to be accompanied by negotiations towards stronger deregulation and trade liberalisation. In general, trade liberalisation is likely to have a stronger positive (negative) impact the more restrictive the trade regime at the outset. The detailed analysis in this chapter will try to identify those service industries which are competitive and dynamically growing and where trade liberalisation might have the largest impact on raising the market potential for Austria. Knowledge of where Austrian firms are competitive, which sectors have advantageous sector characteristics in terms of skills and factor intensities, or where a dynamic development is already reflected in the data considered, could feed back into negotiating priorities from an Austrian perspective. Throughout the analysis we will mainly highlight the results for the high-skilled and knowledge intensive service sectors but also discuss the main findings for sectors that are highly represented in the Austrian service sector.

5.1 Detailed analysis for sectors facing liberal trade regimes

Sectors reviewed in this chapter are of group 1, 2 and 5 in tables 4 and 5. Tables 10 and 11 at the end of this chapter present the most important structural and performance indicators as well as their development over time at the detailed sector level. Figure 2 and table 9 summarize this data qualitatively along the most important dimensions of the analysis: the competitive position, growth dynamics, firm entries, intrinsic tradability as well as skill and factor intensities. Clearly, a combination of high skill intensity, a good competitive position paired with dynamic growth and a high share of firm entries will indicate the most promising fields of activity.

5.1.1 Skill intensive and knowledge intensive sectors

The most outstanding sector in this respect is sector 741 which comprises most of the high skilled labour intensive business services such as consultancy, legal, accounting, book-keeping and market research services. It accounts for about 4% of employment and of value added, respectively, of the total service sector and is thus one of the more important Austrian service sectors. Still, Austria's relative specialization into these services lags behind the average of the European countries compared. While neither being in a position of clear advantage nor disadvantage in terms of productivity or unit labour costs, this sector was gaining in competitiveness and growing dynamically and is among those activities with the highest share of new firm entries. Exports also developed vividly.

Renting of machinery and equipment (713) is another relatively skill-intensive and highly competitive sector with very dynamic growth, but a relatively low share of new firm entries.

Architectural, engineering activities and technical testing and analysis (749=742+743) are somewhat lagging behind other European countries in terms of productivity and have somewhat higher unit labour costs, but the difference is small and value added as well as productivity increased steadily over the period 2000-2004. While there is no comparable data for Europe at the more detailed sector level, data for Germany, suggests a good competitive position of Austria in technical testing activities (743), especially in terms of unit labour costs, while this data reveals a bad relative position for Austrian engineering and architectural services (742). However, from the lower part of figure 2, and the lower panel of table 9 (as well as the detailed data in table 10 and 12), we find that this is a dynamic sector with a above average share of new firm entries and strong productivity growth.

The telecommunications sector (642) is characterized by a very low export share in total sales. As an important input factor for many other industries in the economy it is likely, however, to indirectly contribute to the competitiveness and the exports of the rest of the economy. While the relative unit labour cost position only indicates a minor competitive disadvantage, productivity of the sector is clearly below the average of the European countries compared, but has increased strongly and improved Austria's relative unit labour cost position.

Growth in value added was very dynamic in all of the skill-intensive and technology driven computer service industry (720) accompanied by high employment growth, a high share of new firm entries and substantial increases in the number of firms. The Austrian employment and production shares of the computer related activities are, however, clearly below other European countries. But since value added and employment growth was also more dynamic than in the average European country compared some catching up with other countries occurred. However, looking at other performance indicators reveals much scope for improvement. Productivity is lower and productivity growth is lagging behind the average European country in the sample, while wages are lower, unit labour costs are still higher and increasing.

Table 9: Competitiveness and growth dynamics in the Austrian service sectors - Liberal market access

	1 *Good competitive position and gain in competitiveness*	2 *Good competitive position and losing competitiveness*	3 *Competitive disadvantage and gain in competitiveness*	4 *Competitive disadvantag and losing competitiveness*
Dynamic growth with high share of new firm entries				
Internationally tradable			+ 749 Archit., engineer., techn. tests	+ 720* Computer
Low intrinsic tradability	+ 741 Consultants - 602 Other land transport - 747 Industrial cleaning		0 511 Wholesale-fee/contract basis - 521 Retail sale in non-spec. stores	- 748 Other business activities
Dynamic growth with low share of new firm entries				
Internationally tradable	+ 713 Renting other machinery 0 451 Site preparation			0 455 Renting of constr.equipment
Low intrinsic tradability			+ 642 Telecommunications	0 504 Sale, repair motorcycles - 523 Retail sale of pharmac. - 746 Investigation and security
Low growth but high share of new firm entries				
Internationally tradable			- 556* Hotels and other	- 526 Retail sale not in stores
Low intrinsic tradability			- 452 Civil engineering	+ 501 Sale of motor vehicles + 744 Advertising 0 522 Retail sale of food, bev., tob. - 505 Retail sale of automotive fuel - 524 Other retail sale
Low growth and low share of new firm entries				
Internationally tradable	- 513 Wholesale food, bev, tob			- 512 Wholesale agricultural prod.
Low intrinsic tradability				+ 525 Retail salesec-hd. goods + 633 Travel agenc., tour operators 0 503 Sale of motor vehicle parts - 527 Repair of household goods

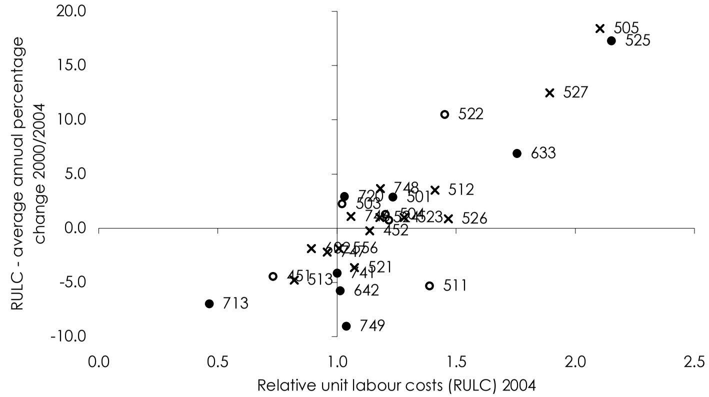
Selected sectors

	1 *High productivity growth*	2 *Low productivity growth*
Dynamic growth with high share of new firm entries		
Internationally tradable	+ 722 Software + 742 Architectur, engineering - 552 Camping sites	
Dynamic growth with low share of new firm entries		
Internationally tradable	+ 721 Hardware consult.	+ 724 Data base act. + 732 R&D on social sciences
Low growth but high share of new firm entries		
Internationally tradable	- 551 Hotels	+ 723 Data processing
Low tradabilty	+ 743 Technical testing	
Low growth and low share of new firm entries		
Low tradabilty		- 725 Repair of office machinery

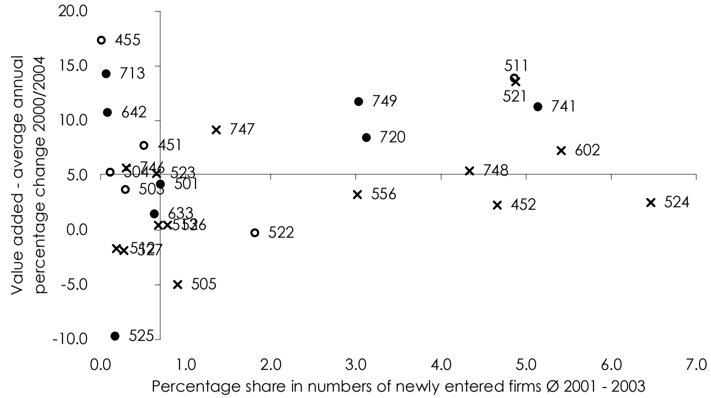
* 556=551+552; 720=721+722+723+724+725.

Figure 2: Competitiveness and growth dynamics of liberal sectors by sector characteristic

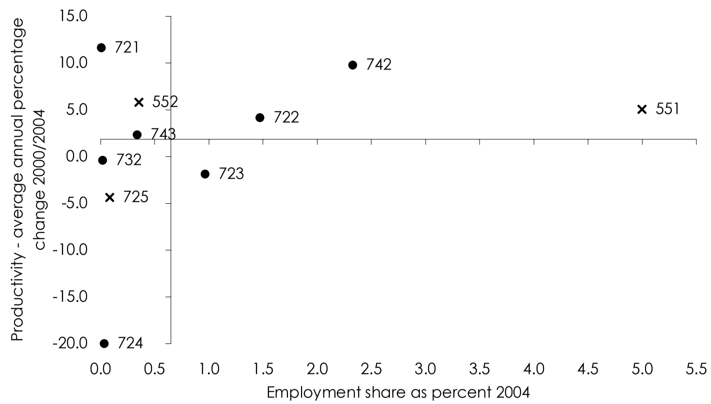
Competitiveness



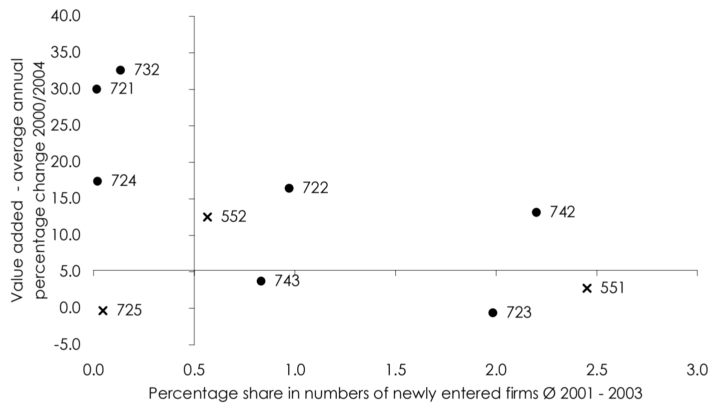
Growth dynamics



Productivity - selected sectors



Growth dynamics - selected sectors



Sector characteristics: ● Favourable o Neutral x Unfavourable

Source: ST.AT, Eurostat, Austrian social security files, own calculations.

A comparison of computer service activities to European countries at the more detailed sector level is not possible. The lower part of figure 2, and the lower panel of table 9 (as well as the detailed data in table 10 and 11) summarize the most important indicators and developments in some of the computer service industries (721-724) in Austria at this higher disaggregated level. The most important subsector in terms of employment is software consultancy and supplying services (722). This sector, together with hardware consultancy services (721) also exhibited high productivity growth. Value added growth was very dynamic in all of the computer sectors, except for data processing services (723), which also had a very bad productivity performance. Database activities (724) were growing rapidly, but also performed badly in terms of productivity. Exports grew dynamically but in hardware consultancy (721).

The remaining liberalized sectors holding favourable sector characteristics are characterized by competitive disadvantages, worsening unit labour cost positions and low growth in value added. Of those, the advertising sector (744) is one of the more dynamic sectors as to employment growth and one of the more appealing sectors for new firm entries.

5.1.2 Service sectors with a high representation in the Austrian service sector

From the rest of the sectors facing a liberal trade regime, some of the more important sectors in terms of employment and value added in the Austrian service sector are the group of "other retail sales in specialized stores" (524), retail sale in non-specialized stores (521), land transport (excluding railways; 602), building of constructions (452) as well as the hotel sector (556). All of these sectors are low-skilled labour intensive and most of them exhibit low intrinsic tradability. Out of these, land transport (602) ranks best in terms of competitiveness and growth dynamics. Productivity levels are above the European average and the relative unit labour cost position is good. It is also as sector where efficiency and competitiveness increased over the periods considered. Hotels and accommodation services (556) are characterized by low productivity levels and very low wage levels. On an international scale however, the data on Austria provide a relatively favourable picture. Productivity is slightly higher than in the average of the European countries compared, and exhibited the highest increase. Unit labour costs are slightly above the average of the reference group of countries, but grew at a much lower rate due to the high productivity growth. Unit labour costs are lower in Italy, Germany and the UK, in the rest of the countries compared they are higher, even in Hungary. Noticeable is Austria's rather strong relative specialization into hotel services. They account for an employment share of 5.3% which is far the highest among the European countries compared, followed by Italy and Germany with shares of only about 2.5 percent.

The two retail sale sectors present a positive picture in terms of efficiency compared to other European countries, while unit labour costs are always clearly higher. Retail sale in non-specialized stores (521) was the more dynamic area experiencing an improvement in productivity and the unit labour cost position. Retail sale in specialized stores (524) was less dynamic and loosing competitiveness. Finally, the sector building of constructions (452) is at a competitive disadvantage, but the relative unit labour costs position has been improving.

A sector that positively stands out in a comparison to other European countries in terms of productivity and relative unit labour costs is wholesale of food and beverages (513). However, it has been a low growth area in terms of value added and productivity increases were mostly brought about by the shedding of labour.

Table 10: Structural characteristics and performance indicators of liberal market access sectors by industry, 2004

NACE	NACE description	Value added share	Employment share	Productivity	Unit labour costs	Export share in sales	Share in employment of newly entered firms[1])	Share in number of newly entered firms[1])
		As percent		1,000 €			As percent	
Internationally tradable, very liberal sectors								
72	Computer and related activities							
	AT	2.9	2.6	56.0	72.0	4.4	3.6	4.4
	Europe	4.9	3.4	68.7	69.8	.	.	.
721	Hardware consultancy							
	AT	0.0	0.0	50.0	45.3	5.1	0.0	-3.6
	Europe	.	.	.	.	.	.	.
722	Software consultancy and supply							
	AT	1.8	1.5	60.2	79.3	5.2	1.3	1.1
	Europe	.	.	.	.	.	.	.
723	Data processing							
	AT	1.0	1.0	52.8	58.8	3.7	2.2	7.5
	Europe	.	.	.	.	.	.	.
724	Data base activities							
	AT	0.0	0.0	52.0	73.8	4.4	0.0	-1.7
	Europe	.	.	.	.	.	.	.
551+552	Hotels, camping sites and other							
	AT	3.4	5.4	31.5	61.7	0.1	3.0	-1.1
	Europe	1.4	2.4	28.7	61.3	.	.	.
551	Hotels							
	AT	3.2	5.0	31.7	62.4	0.1	2.5	-0.9
	Europe	.	.	.	.	.	.	.
552	Camping sites and other provision of short-stay accommodation							
	AT	0.2	0.4	29.6	51.9	0.2	0.5	-2.0
	Europe	.	.	.	.	.	.	.
Internationally tradable, liberal sectors								
742+743	Architectural and engineering activ., techn. testing and analysis							
	AT	2.6	2.7	48.7	66.1	8.1	3.2	0.9
	Europe	3.2	2.9	52.9	63.5	.	.	.
742	Architectural and engineering activities and related technical consultancy							
	AT	2.3	2.3	48.9	65.7	8.4	2.3	0.5
	Europe	.	.	.	.	.	.	.
713	Renting of other machinery and equipment							
	AT	1.0	0.2	284.3	13.4	2.2	0.1	-3.9
	Europe	0.7	0.3	108.6	28.8	.	.	.
732	Research and experimental development on social sciences and humanities							
	AT	0.0	0.0	41.7	68.5	0.5	0.2	-1.3
	Europe	.	.	.	.	.	.	.
451	Site preparation							
	AT	0.5	0.4	57.0	47.3	0.6	0.5	1.2
	Europe	0.4	0.4	45.7	64.6	.	.	.
455	Renting of construction or demolition equipment with operator							
	AT	0.0	0.0	63.7	60.4	1.9	0.0	-3.7
	Europe	0.1	0.1	61.9	49.6	.	.	.
512	Wholesale of agricultural raw materials and live animals							
	AT	0.6	0.9	34.8	80.9	7.1	0.2	0.7
	Europe	0.3	0.3	50.4	57.4	.	.	.
526	Retail sale not in stores							
	AT	0.2	0.5	25.1	80.8	5.5	0.7	-0.1
	Europe	0.6	0.9	29.2	55.1	.	.	.
513	Wholesale of food, beverages and tobacco							
	AT	2.0	1.4	69.2	49.2	13.6	0.6	-1.2
	Europe	1.7	1.6	51.4	60.0	.	.	.

Table 10/continued

NACE	NACE description	Value added share	Employ-ment share	Produc-tivity	Unit labour costs	Export share in sales	Share in employment of newly entered firms[1])	Share in number of newly entered firms[1])
		As percent		1,000 €			As percent	
Low intrinsic tradability, liberal in mode 3 and mode 4								
642	Telecommunications							
	AT	3.3	1.1	152.6	34.0	0.3	0.1	0.0
	Europe	5.0	1.4	173.6	33.3	.	.	.
744	Advertising							
	AT	0.8	1.1	38.1	67.3	2.1	1.9	3.0
	Europe	1.0	1.0	48.2	58.6	.	.	.
452	Building of complete constructions or parts thereof; civil engineering							
	AT	6.9	6.8	51.3	74.7	0.6	4.5	0.2
	Europe	5.9	6.2	45.7	65.7	.	.	.
501	Sale of motor vehicles							
	AT	2.1	2.0	52.7	64.0	12.1	0.7	0.3
	Europe	2.4	2.0	58.5	51.8	.	.	.
633	Activities of travel agencies and tour operators; tourist assistance activities n. e. c.							
	AT	0.4	0.7	30.6	87.9	1.7	0.6	1.3
	Europe	0.6	0.6	53.9	50.1	.	.	.
743	Technical testing and analysis							
	AT	0.3	0.3	47.6	68.8	4.3	0.9	2.4
	Europe	.	.	.	.	.	.	.
741	Legal, account., book-keep., auditing activ.; tax consult.; market research; holdings							
	AT	4.7	4.1	56.9	59.4	10.2	5.3	3.6
	Europe	6.7	5.4	59.3	59.3	.	.	.
525	Retail sale of second-hand goods in stores							
	AT	0.0	0.1	12.4	92.7	13.1	0.2	-1.3
	Europe	0.1	0.1	30.0	43.1	.	.	.
503	Sale of motor vehicles parts and accessories							
	AT	0.6	0.6	50.5	63.6	13.1	0.3	1.7
	Europe	0.6	0.6	47.3	62.3	.	.	.
504	Sale, maintenance and repair of motorcycles and related parts and accessories							
	AT	0.1	0.1	36.7	60.8	8.7	0.1	1.6
	Europe	0.1	0.1	36.8	50.6	.	.	.
511	Wholesale on a fee or contract basis							
	AT	0.8	0.8	52.3	44.5	7.2	4.6	1.8
	Europe	1.1	1.0	53.4	32.0	.	.	.
522	Retail sale of food, beverages and tobacco in specialized stores							
	AT	0.7	1.4	25.4	67.8	1.9	2.3	1.7
	Europe	0.7	1.4	22.8	46.7	.	.	.
505	Retail sale of automotive fuel							
	AT	0.2	0.6	19.6	86.3	0.4	0.9	0.0
	Europe	0.4	0.5	36.9	41.0	.	.	.
521	Retail sale in non-specialized stores							
	AT	2.6	4.9	26.8	76.4	0.6	4.3	1.2
	Europe	3.7	6.7	26.4	71.2	.	.	.
524	Other retail sale of new goods in specialized stores							
	AT	4.9	8.9	27.7	72.9	3.5	7.0	-1.8
	Europe	4.6	7.8	28.5	61.8	.	.	.
527	Repair of personal and household goods							
	AT	0.1	0.2	16.2	94.3	5.1	0.2	-0.6
	Europe	0.1	0.3	25.6	49.8	.	.	.
725	Maintenance and repair of office, accounting and computing machinery							
	AT	0.1	0.1	29.9	89.8	2.3	0.0	-0.3
	Europe	.	.	.	.	.	.	.
746	Investigation and security activities							
	AT	0.2	0.5	22.8	88.3	0.7	0.3	4.2
	Europe	0.6	1.1	27.6	83.5	.	.	.
748	Miscellaneous business activities n. e. c.							
	AT	1.1	1.4	40.8	67.1	22.8	5.0	8.1
	Europe	2.5	2.7	45.6	56.8	.	.	.
602	Other land transport							
	AT	5.0	5.7	44.7	64.3	2.9	5.0	1.3
	Europe	3.5	4.6	37.6	72.1	.	.	.
523	Retail sale of pharmaceutical and medical goods, cosmetic and toilet articles							
	AT	1.0	1.7	30.8	69.9	1.4	0.6	0.6
	Europe	1.1	1.4	39.8	54.5	.	.	.
747	Industrial cleaning							
	AT	1.0	2.5	20.0	78.2	0.4	1.1	2.2
	Europe	1.2	3.7	16.2	81.6	.	.	.

Source: ST.AT, Eurostat, Austrian social security files, own calculations. - Note: Europe = Belgium, Germany, Denmark, Finland, France, Italy, Norway, Sweden and UK. - 1) Ø 2001/2003.

Table 11: Dynamics across sectors with liberal market access (average annual percentage change)

NACE	NACE description	1997-2005 Value added	1997-2005 Employ-ment	1997-2005 Produc-tivity	1997-2005 Unit labour costs	1997-2004 Enter-prises	1997-2004 Export	2000-2004 Value added	2000-2004 Employ-ment	2000-2004 Produc-tivity	2000-2004 Unit labour costs	2000-2004 Enter-prises	2000-2004 Export	98-00/01-03 Share in number of newly entered firms
Internationally tradable, very liberal sectors														
72	Computer and related activities													
	AT	13.8	11.6	1.9	0.7	13.4	13.2	8.5	7.3	1.1	2.4	13.5	9.0	3.1
	Europe	.	.	.	.	.	.	6.6	2.8	3.7	-0.5	2.6	.	.
721	Hardware consultancy													
	AT	.	.	.	.	49.8	2.9	30.0	16.5	11.6	-17.6	66.4	-64.1	-36.4
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
722	Software consultancy and supply													
	AT	19.8	15.9	3.3	0.7	15.2	12.7	16.4	11.8	4.1	3.3	12.6	12.1	-22.1
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
723	Data processing													
	AT	7.4	7.0	0.4	-0.6	11.3	14.5	-0.6	1.3	-1.9	-1.0	12.8	31.2	26.8
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
724	Data base activities													
	AT	.	.	.	.	34.4	52.9	17.4	46.8	-20.0	31.6	50.3	33.0	-10.5
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
551+552	Hotels, camping sites and other													
	AT	3.6	-0.6	4.3	-0.9	-1.3	-7.4	3.3	-1.7	5.0	0.4	-1.2	-38.3	-17.1
	Europe	.	.	.	.	.	.	0.7	1.7	-0.9	2.3	0.7		.
551	Hotels													
	AT	3.3	-0.8	4.2	-0.7	-1.5	-1.8	2.8	-2.2	5.0	0.6	-1.7	-40.6	-14.5
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
552	Camping sites and other provision of short-stay accommodation													
	AT	8.2	1.9	6.2	-2.5	0.0	-20.3	12.5	6.3	5.8	-1.2	2.3	9.5	-27.8
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
Internationally tradable, liberal sectors														
742+743	Architectural and engineering activ., techn. testing and analysis													
	AT	7.1	4.9	2.1	-0.8	7.4	4.5	11.7	2.9	8.6	-7.1	8.2	-1.6	-8.3
	Europe	.	.	.	.	.	.	1.4	1.6	-0.2	2.1	3.9	.	.
742	Architectural and engineering activities and related technical consultancy													
	AT	7.4	5.4	2.0	-0.9	8.4	7.6	13.1	3.1	9.8	-8.4	9.5	-1.0	-8.6
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
713	Renting of other machinery and equipment													
	AT	12.9	7.2	5.3	-1.6	8.7	-2.0	14.3	0.7	13.5	-6.6	8.2	24.5	-33.7
	Europe	.	.	.	.	.	.	6.9	2.7	4.1	0.5	3.8	.	.
732	Research and experimental development on social sciences and humanities													
	AT	16.2	17.7	-1.3	3.3	24.6	-13.4	32.6	33.1	-0.4	-2.9	59.9	-14.6	4.2
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
451	Site preparation													
	AT	7.0	4.6	2.3	-1.2	4.4	13.0	7.7	3.1	4.5	-5.1	6.0	-16.4	-9.7
	Europe	.	.	.	.	.	.	4.1	1.7	2.3	-0.6	3.0	.	.
455	Renting of construction or demolition equipment with operator													
	AT	13.5	16.9	-2.9	6.3	5.7	40.0	17.4	23.4	-4.9	-0.4	42.2	106.1 .	
	Europe	.	.	.	.	.	.	3.6	-1.4	5.1	-1.1	-0.8	.	.
512	Wholesale of agricultural raw materials and live animals													
	AT	1.0	0.8	0.2	1.3	-0.2	4.8	-1.7	-0.7	-1.0	2.0	1.1	-1.6	-10.2
	Europe	.	.	.	.	.	.	2.9	-0.7	3.6	-1.4	1.8	.	.
526	Retail sale not in stores													
	AT	-2.3	2.3	-4.5	4.8	3.3	-0.9	0.5	1.5	-1.0	-0.3	4.5	1.2	-1.5
	Europe	.	.	.	.	.	.	0.7	-2.8	3.6	-1.1	1.4	.	.
513	Wholesale of food, beverages and tobacco													
	AT	2.9	-4.2	7.3	-4.5	5.3	15.0	0.4	-9.8	11.3	-5.3	5.1	9.8	-11.3
	Europe	.	.	.	.	.	.	3.0	0.1	2.9	-0.6	1.0	.	.

Table 11/continued

NACE	NACE description	1997-2005 Value added	Employ-ment	Produc-tivity	Unit labour costs	Enter-prises	1997-2004 Export	2000-2004 Value added	Employ-ment	Produc-tivity	Unit labour costs	Enter-prises	Export	98-00/01-03 Share in number of newly entered firms
Low intrinsic tradability, liberal in mode 3 and mode 4														
642	Telecommunications													
	AT	-1.8	-14.3	14.6	-5.9	6.9	132.6	10.8	-6.5	18.4	-11.1	2.1	1.3	-41.9
	Europe	.	.	.	.	.	.	9.0	-0.7	9.7	-5.8	3.8	.	.
744	Advertising													
	AT	4.6	8.7	-3.8	3.7	12.4	6.0	-1.5	8.5	-9.3	7.8	18.1	8.0	-1.0
	Europe	.	.	.	.	.	.	-1.3	1.9	-3.1	2.8	2.7	.	.
452	Building of complete constructions or parts thereof; civil engineering													
	AT	1.0	-1.0	2.0	-1.1	5.3	-5.7	2.3	0.5	1.8	-1.9	8.6	-3.0	1.8
	Europe	.	.	.	.	.	.	2.6	-1.0	3.7	-1.7	1.5	.	.
501	Sale of motor vehicles													
	AT	4.3	2.0	2.2	-0.2	6.3	1.1	4.2	1.8	2.3	-0.1	8.8	12.7	-2.1
	Europe	.	.	.	.	.	.	6.3	0.5	5.8	-2.9	3.0	.	.
633	Activities of travel agencies and tour operators; tourist assistance activities n. e. c.													
	AT	1.4	3.5	-2.0	2.8	4.3	-8.0	1.5	4.1	-2.5	2.5	4.3	-10.0	-12.9
	Europe	.	.	.	.	.	.	3.1	-1.0	4.2	-4.1	3.3	.	.
743	Technical testing and analysis													
	AT	5.0	2.2	2.8	0.1	2.0	-16.3	3.7	1.4	2.3	1.4	0.8	-10.9	-7.5
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
741	Legal, account., book-keep., auditing activ.; tax consult.; market research; holdings													
	AT	8.9	5.9	2.8	0.6	11.0	30.9	11.3	8.0	3.0	0.3	16.5	23.8	10.7
	Europe	.	.	.	.	.	.	1.4	3.5	-2.0	4.7	6.1	.	.
525	Retail sale of second-hand goods in stores													
	AT	-3.9	2.7	-6.4	8.7	0.9	-1.3	-9.7	2.8	-12.2	21.3	1.3	5.2	-2.9
	Europe	.	.	.	.	.	.	0.3	-2.0	2.4	3.4	3.0	.	.
503	Sale of motor vehicles parts and accessories													
	AT	2.6	1.8	0.8	1.0	4.4	5.6	3.7	1.1	2.5	0.4	7.5	3.4	8.7
	Europe	.	.	.	.	.	.	4.9	-0.5	5.5	-1.8	3.0	.	.
504	Sale, maintenance and repair of motorcycles and related parts and accessories													
	AT	4.9	6.9	-1.9	2.9	7.1	11.5	5.3	8.0	-2.5	2.1	13.5	31.0	45.7
	Europe	.	.	.	.	.	.	4.4	2.5	1.9	0.8	3.5	.	.
511	Wholesale on a fee or contract basis													
	AT	11.0	7.3	3.4	-0.3	8.3	-0.9	13.9	7.5	5.9	-4.8	13.9	-0.2	-10.6
	Europe	.	.	.	.	.	.	3.6	-1.6	5.3	0.5	-1.5	.	.
522	Retail sale of food, beverages and tobacco in specialized stores													
	AT	3.3	4.5	-1.1	2.5	1.4	-0.5	-0.3	5.4	-5.4	9.2	1.7	-5.2	7.6
	Europe	.	.	.	.	.	.	3.6	-0.2	3.7	-1.2	-0.2	.	.
505	Retail sale of automotive fuel													
	AT	2.7	4.1	-1.4	2.0	0.6	21.4	-5.0	4.4	-9.0	12.1	1.9	16.1	-20.7
	Europe	.	.	.	.	.	.	8.2	1.3	6.8	-5.3	-1.7	.	.
521	Retail sale in non-specialized stores													
	AT	7.3	4.1	3.1	-0.6	0.3	-15.2	13.6	8.2	5.0	-2.3	3.2	10.9	24.7
	Europe	.	.	.	.	.	.	1.7	1.8	-0.1	1.4	-1.5	.	.
524	Other retail sale of new goods in specialized stores													
	AT	3.0	1.4	1.5	-0.4	2.8	-4.0	2.5	2.3	0.2	1.1	5.2	0.4	-13.5
	Europe	.	.	.	.	.	.	3.9	1.2	2.7	0.1	1.5	.	.
527	Repair of personal and household goods													
	AT	-4.8	0.5	-5.3	5.1	1.9	4.7	-1.9	5.7	-7.1	10.0	5.6	72.0	-16.8
	Europe	.	.	.	.	.	.	3.5	0.5	3.0	-2.2	-0.6	.	.

Table 11/continued

NACE	NACE description	1997-2005 Value added	Employ-ment	Produc-tivity	Unit labour costs	Enter-prises	1997-2004 Export	2000-2004 Value added	Employ-ment	Produc-tivity	Unit labour costs	Enter-prises	Export	98-00/01-03 Share in number of newly entered firms
Low intrinsic tradability, liberal in mode 3 and mode 4														
725	Maintenance and repair of office, accounting and computing machinery													
	AT	4.2	5.7	-1.3	-0.2	12.9	50.8	-0.3	4.2	-4.4	0.2	8.9	-9.8	-13.8
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
746	Investigation and security activities													
	AT	5.9	6.2	-0.2	-1.3	20.0	5.6	5.7	5.7	0.0	-0.1	13.8	-1.8	7.2
	Europe	.	.	.	.	.	.	9.1	5.8	3.1	-1.1	9.4	.	.
748	Miscellaneous business activities n. e. c.													
	AT	10.2	11.6	-1.2	3.6	13.0	52.8	5.4	9.3	-3.5	5.2	12.4	20.7	39.8
	Europe	.	.	.	.	.	.	6.8	7.3	-0.5	1.5	7.2	.	.
602	Other land transport													
	AT	5.5	3.0	2.4	0.4	2.9	2.8	7.3	4.6	2.6	-0.3	5.8	-5.1	6.1
	Europe	.	.	.	.	.	.	2.1	1.4	0.7	1.6	-0.5	.	.
523	Retail sale of pharmaceutical and medical goods, cosmetic and toilet articles													
	AT	4.2	4.7	-0.5	2.0	3.1	1.2	5.2	4.4	0.7	1.0	4.9	12.5	3.2
	Europe	.	.	.	.	.	.	7.4	3.5	3.8	0.0	1.7	.	.
747	Industrial cleaning													
	AT	6.9	3.8	2.9	-0.7	7.6	11.0	9.2	6.4	2.6	-2.0	7.4	39.3	-1.9
	Europe	.	.	.	.	.	.	5.6	3.0	2.5	0.2	3.4	.	.

Source: ST.AT, Eurostat, Austrian social security files, own calculations. - Note: Europe = Belgium, Germany, Denmark, Finland, France, Italy, Norway, Sweden and UK.

5.2 Detailed analysis for medium regulated sectors

Sectors reviewed in this section are of group 3, group 6 and 7 in tables 4 and 5. Group 3 covers all internationally tradable sectors confronted with medium regulated market access regulations; group 6 subsumes all sectors with low intrinsic tradability facing medium regulation in mode 3 ("FDI") and strong regulation in mode 4 ("movement of persons"); and finally, group 7 which summarizes all service sectors characterized by low intrinsic tradability and strong regulation in mode 3 and moderate regulation in mode 4. This last group was categorized as "medium regulated" because the major part of employment and output of the services subsumed under this heading accrue from building services, for which the mode 4 delivery of services is potentially also important.

Again, figure 3 and table 12 qualitatively summarize this data along the most important dimensions of the analysis, while tables 13 and 14 at the end of the chapter present the most important structural and performance indicators as well as their development over time at the detailed sector level.

5.2.1 Skill intensive and knowledge intensive sectors

The first important point to note from table 12 is that none of the services sectors combines all of the most beneficial attributes of a good and improving competitive position, dynamic growth and high attractiveness for new firm entries. Furthermore, none of the sectors has an outstanding competitive position. The knowledge intensive R&D sector (730) has a somewhat higher productivity, lower unit labour costs and a higher investment rate than the average European country. There is also very dynamic growth in value added, the number of enterprises and employment. Productivity growth however was slower than in Europe and the advantage in unit labour costs has been shrinking since 2000. The data also reveal a very favourable picture for renting of automobiles and other transport equipment (711+712) with a clear productivity lead and unit labour costs that are only about half the average European level. As with the R&D sector, however, that competitive edge has been shrinking clearly since 2000.

Insurance activities (660; excluding compulsory social security) listed within this group belong to the more skill intensive industries. Unfortunately Eurostat's New Cronos Database lacks the data to compare the Austrian position to that of other countries. Complementing our sample with data from the EUKLEMS database, we are able to compare the Austrian position to a reference group of five European countries (Germany, Finland, France, Italy and the Netherlands). This data indicates a good competitive position that strongly deteriorated over the period 2000-2004. In a comparison to the Netherlands, which emerged as one of the most competitive insurance providers among the countries considered, we still find an enormous potential for productivity improvements for the Austrian insurance sector. Austria's labour productivity in the insurance sector reaches only about half the level of the Netherlands'. Interestingly we find that the typical Austrian firm within this sector employs about 2.5times as many people as the typical firm in the Netherlands. As labour costs are only about half the level in the Netherlands, unit labour costs are equal. For activities auxiliary to insurance and pension funding (672) data is available only for the Netherlands and only for employment. The only assertion we can give is that the employment share of these services is much higher in the Netherlands than in Austria. Productivity growth in insurance and pension funding (660) was above average over the period 2000 – 2004 as well as the decrease in unit labour costs. Value added growth was very low and employment as well as the number of firms shrank in the period considered. Activities auxiliary to insurance (672) are characterized by dynamic productivity growth and well above average growth in value added and employment.

5.2.2 Service sectors with a high representation in the Austrian service sector

The transport sector (635) subsuming cargo handling (631) and other supporting transport activities (632) as well as transport agencies (634) exhibits higher efficiency than in the other European countries, but somewhat higher unit labour costs. This weak competitive disadvantage in relative unit labour costs has been shrinking, however. The more Austrian data at the more detailed sector level reveals high productivity growth which was particularly strong in supporting transport activities (632) and also above average for transport agencies (634). While we lack the data to compare the Austrian position to the European average, a comparison to German data at the more detailed sector level reveals a less competitive stance in activities of transport agencies (634), the sector within this group of transport related activities, which is the most preferable sector in terms of sector characteristics. The dynamics reveal some improvement in competitiveness over the period 2000 – 2004. Austria's position is more favourable in other supporting transport activities (632) and cargo handling and storage (631).

The restaurants, canteens and catering sectors (557=553+554+555) is one of the most important service sectors in terms of employment, accounting for about 7% of total employment in the service sector and an extraordinarily high share of new firm entries (20%). It is a sector that is characterized by low intrinsic tradability and medium regulation in mode 3 and strong regulation in mode 4 and a high share of low skilled labour. We find that the productivity of Austrian restaurants is higher than in most other compared countries, and the unit labour cost position reveals a competitive disadvantage. Investments as a share of value added are much lower in Austria than in the average of the European countries compared. Growth rates in table 14 indicate a further deterioration of the competitive stance over time, with disinvestments and the growth in unit labour costs being clearly higher than in the average of the compared countries and productivity growth lagging behind.

Table 12: Competitiveness and growth dynamics in the Austrian service sectors - Medium regulated market access

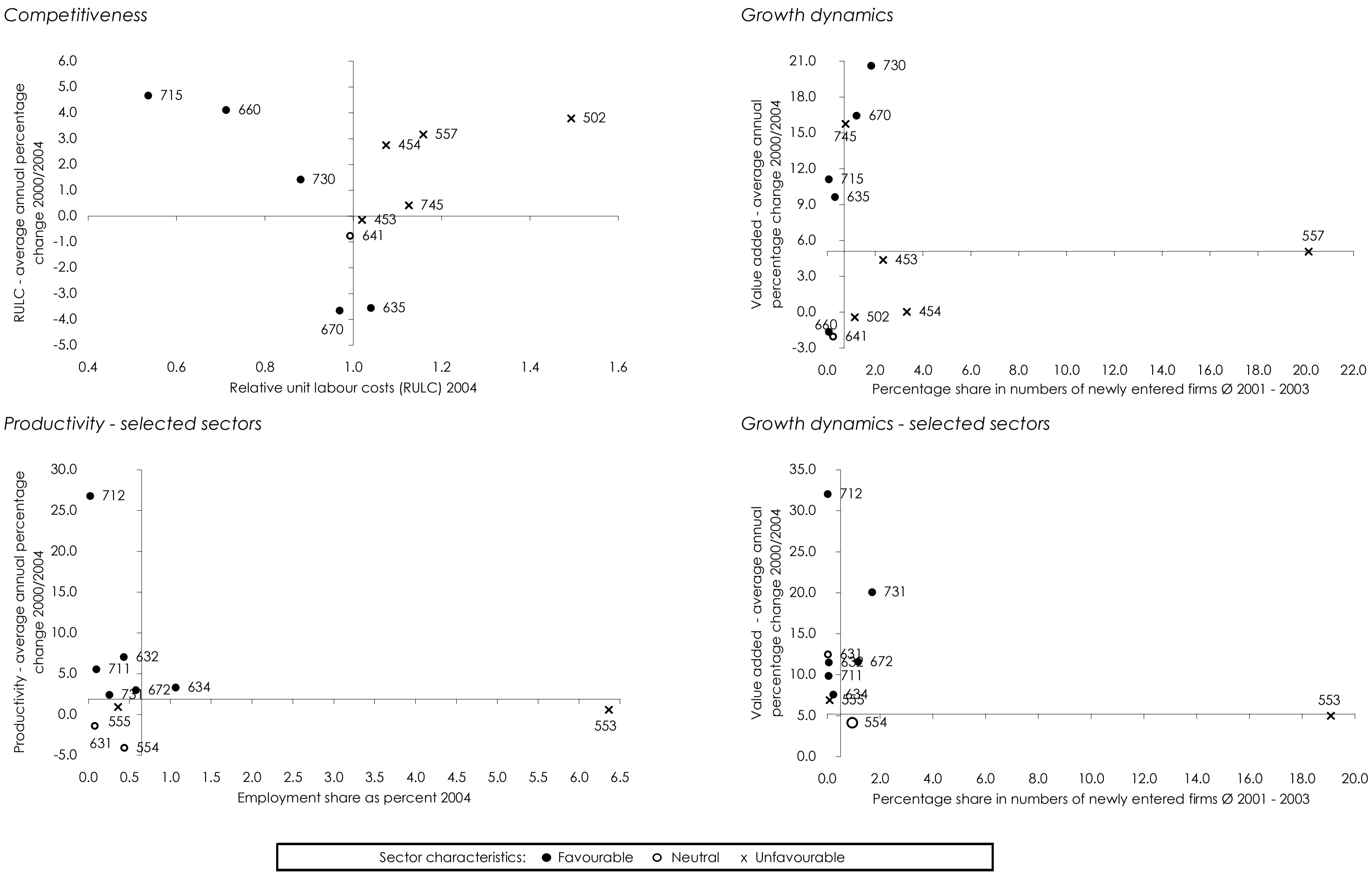
	1 *Good competitive position and gain in competitiveness*	2 *Good competitive position and losing competitiveness*	3 *Competitive disadvantage and gain in competitiveness*	4 *Competitive disadvantag and losing competitiveness*
Dynamic growth with high share of new firm entries				
Internationally tradable		+ 730 R&D		- 745 Labour recruit., person. prov.
Low intrinsic tradability	+ 670* Act. auxil. to financ. intermed.			
Dynamic growth with low share of new firm entries				
Internationally tradable		+ 715* Rent of autom. and oth.	+ 635* Cargo handling, transp. agenc.	
Low growth but high share of new firm entries				
Low intrinsic tradability			- 453 Building installation	- 454 Building completion - 502 Repair of motor vehicles - 557* Restaurants and catering
Low growth and low share of new firm entries				
Low intrinsic tradability	0 641 Post and courier	+ 660 Insurance services		

Selected sectors

	1 *High productivity growth*	2 *Low productivity growth*
Dynamic growth with high share of new firm entries		
Internationally tradable	+ 731 R&D natural sciences	
Low intrinsic tradability	+ 672 Act. auxil. to insurance	
Dynamic growth with low share of new firm entries		
Internationally tradable	+ 632 Other supp. transp. + 634 Other transport agencies + 711 Renting of automobiles + 712 Renting of o. transp. equip.	0 631 Cargo handling and storage
Low intrinsic tradability		- 555 Canteens and catering
Low growth but high share of new firm entries		
Low intrinsic tradability		0 554 Bars - 553 Restaurants

* 557=553+554+555; 635=631+632+634; 670=671+672; 715=711+712

Figure 3: Competitiveness and growth dynamics of medium regulated sectors by sector characteristic



Source: ST.AT, Eurostat, Austrian social security files, own calculations.

Building installation (453) and building completion (454) also account for relatively high shares in total Austrian supplies of services. Both are characterized by low skill intensity, low intrinsic tradability, strong regulation in mode 3 but moderate regulation in mode 4. These are the service sectors where Austria is most likely to compete with lower wage countries in Central and Eastern Europe. For both sectors, we find a generally higher productivity in Austria compared to the average European country, which does not translate into a lead in competitiveness as measured by relative unit labour costs. While these costs almost match the European level in building installation (453), they are higher in building completion (454).

For these services it is especially interesting to compare the Austrian position to some lower wage countries. Looking at Hungary, for which we have the relevant data, it is interesting to find that while Hungary is more competitive in all of these industries, in the building sectors (especially in building completion, 454) the competitive edge is not as high as one would have presumed in a view of the much lower wages. Incidentally, the still huge productivity differences outweigh much of the advantages stemming from low labour costs. In a comparison to Europe, Hungary even exhibits higher unit labour costs in building completion (454).

Table 13: Structural characteristics and performance indicators of medium regulated market access sectors by industry, 2004

NACE	NACE description	Value added share	Employ-ment share	Produc-tivity	Unit labour costs	Export share in sales	Share in employment of newly entered firms[1]	Share in number of newly entered firms[1]
		As percent		1,000 €			As percent	
International tradable, medium regulated market access								
631+632+634	Cargo handling, storage, oth. supporting transport act., transport agencies							
	AT	2.5	1.6	79.4	56.7	2.7	0.4	-0.3
	Europe	3.6	2.6	67.1	54.5	.	.	.
634	Activities of other transport agencies							
	AT	1.2	1.1	54.4	76.5	3.7	0.3	-0.4
	Europe	.	.	.	.	.	.	.
73	Research and development							
	AT	0.3	0.3	55.6	83.8	14.4	2.0	-1.4
	Europe	0.6	0.5	54.8	95.1	.	.	.
731	Research and experimental development on natural sciences and engineering							
	AT	0.3	0.3	56.7	84.7	16.3	1.8	-1.5
	Europe	.	.	.	.	.	.	.
711+712	Renting of automobiles and other transport equipment							
	AT	1.4	0.1	588.4	7.1	3.3	0.1	-1.5
	Europe	1.0	0.2	224.1	13.2	.	.	.
711	Renting of automobiles							
	AT	1.3	0.1	662.9	6.1	2.6	0.1	-3.4
	Europe	.	.	.	.	.	.	.
712	Renting of other transport equipment							
	AT	0.1	0.0	269.3	17.7	8.6	0.0	7.9
	Europe	.	.	.	.	.	.	.
632	Other supporting transport activities							
	AT	1.2	0.4	143.2	38.4	0.4	0.1	1.3
	Europe	.	.	.	.	.	.	.
631	Cargo handling and storage							
	AT	0.1	0.1	65.7	54.8	9.2	0.0	-4.6
	Europe	.	.	.	.	.	.	.
745	Labor recruitment and provision of personnel							
	AT	1.7	2.6	32.8	92.7	0.4	0.7	6.5
	Europe	2.4	3.8	29.9	82.3	.	.	.
Low intrinsic tradability, medium regulation in mode 3 and strong regulation in mode 4								
660	Insurance and pension funding, except compulsory social security							
	AT	3.0	1.5	96.8	53.3	.	0.1	-1.5
	Europe	.	.	.	.	.	.	.
67	Activities auxiliary to financial intermediation							
	AT	0.7	0.7	48.6	53.2	.	1.4	5.7
	Europe	.	.	.	.	.	.	.
672	Activities auxiliary to insurance and pension funding							
	AT	0.5	0.6	43.4	51.7	.	1.3	5.7
	Europe	.	.	.	.	.	.	.
553+554+555	Restaurants, bars, canteens and catering							
	AT	2.9	7.2	20.4	74.5	0.3	18.5	1.9
	Europe	2.9	7.5	18.9	64.3	.	.	.
554	Bars							
	AT	0.1	0.4	16.8	68.6	0.1	0.9	0.0
	Europe	.	.	.	.	.	.	.
555	Canteens and catering							
	AT	0.2	0.4	29.0	77.5	1.4	0.1	0.5
	Europe	.	.	.	.	.	.	.
553	Restaurants							
	AT	2.6	6.4	20.2	74.5	0.3	17.5	2.1
	Europe	.	.	.	.	.	.	.
Low intrinsic tradability, strong regulation in mode 3 and medium regulation in mode 4								
641	*Post and courier activities*							
	AT	1.4	1.7	40.8	83.6	0.5	0.2	1.9
	Europe	1.8	2.3	37.1	84.3	.	.	.
453	Building installation							
	AT	3.4	4.0	43.2	70.5	1.6	2.3	0.4
	Europe	2.7	3.5	37.1	69.2	.	.	.
454	Building completion							
	AT	1.9	2.7	36.0	66.9	1.0	3.2	0.6
	Europe	1.9	2.7	32.9	62.2	.	.	.
502	Maintenance and repair of motor vehicles							
	AT	0.9	1.4	29.6	85.2	2.9	1.0	0.2
	Europe	1.0	1.4	32.9	57.0	.	.	.

Source: ST.AT, Eurostat, Austrian social security files, own calculations. - Note: Europe = Belgium, Germany, Denmark, Finland, France, Italy, Norway, Sweden and UK. - 1) Ø 2001/2003.

Table 14: Dynamics across sectors with medium regulated market access (average annual percentage change)

NACE	NACE description	1997-2005					1997-2004	2000-2004						98-00/01-03
		Value added	Employ-ment	Produc-tivity	Unit labour costs	Enter-prises	Export	Value added	Employ-ment	Produc-tivity	Unit labour costs	Enter-prises	Export	Share in number of newly entered firms
Internationally tradable, medium regulated market access														
631+632+(	Cargo handling, storage, oth. supporting transport act., transport agencies													
	AT	15.4	10.5	4.4	-1.8	3.0	4.9	9.6	4.5	4.9	-3.0	1.8	5.5	-7.3
	Europe	.	.	.	.	.	.	8.4	6.2	2.1	0.6	2.5	.	.
634	Activities of other transport agencies													
	AT	7.2	3.0	4.1	-1.3	6.8	1.4	7.6	4.1	3.3	-0.8	6.3	0.5	-2.2
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
73	Research and development													
	AT	26.1	20.2	4.9	-3.8	34.3	-2.8	20.6	18.1	2.1	-1.7	48.6	38.6	1.4
	Europe	.	.	.	.	.	.	13.8	6.4	6.9	-3.1	5.2	.	.
731	Research and experimental development on natural sciences and engineering													
	AT	26.7	20.4	5.3	-4.1	45.2	-2.8	20.1	17.3	2.4	-1.6	43.8	39.4	1.2
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
711+712	Renting of automobiles and other transport equipment													
	AT	6.7	4.3	2.3	0.7	5.7	18.3	11.1	4.1	6.7	-2.3	0.5	15.3	-40.8
	Europe	.	.	.	.	.	.	6.7	-1.1	7.9	-6.7	3.9	.	.
711	Renting of automobiles													
	AT	5.2	5.2	0.0	2.1	6.1	16.0	9.8	4.1	5.5	-3.3	1.3	11.1	-45.9
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
712	Renting of other transport equipment													
	AT	23.8	1.0	22.5	-13.2	5.1	24.3	32.0	4.1	26.8	-9.3	-1.0	26.7	-20.0
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
632	Other supporting transport activities													
	AT	21.3	20.5	0.7	0.5	-2.5	46.8	11.5	4.2	7.0	-5.8	-6.9	84.4	-24.1
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
631	Cargo handling and storage													
	AT	6.2	5.6	0.6	-1.1	5.0	20.1	12.5	14.1	-1.4	1.0	20.2	21.0	-5.6
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
745	Labor recruitment and provision of personnel													
	AT	17.7	16.7	0.9	-0.3	15.2	4.0	15.8	11.7	3.6	0.0	18.1	9.0	20.6
	Europe	.	.	.	.	.	.	3.7	2.2	1.5	-0.4	4.9	.	.
Low intrinsic tradability, medium regulation in mode 3 and strong regulation in mode 4														
660	Insurance and pension funding, except compulsory social security													
	AT	4.5	-1.7	6.3	-5.0	-8.0	-100.0	0.8	-2.6	3.5	-4.7	-14.6	.	-18.0
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
67	Activities auxiliary to financial intermediation													
	AT	17.6	11.5	5.5	-2.3	10.4	-100.0	15.9	11.1	4.3	0.1	7.2	.	15.2
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
672	Activities auxiliary to insurance and pension funding													
	AT	13.3	9.2	3.7	-2.4	7.5	-100.0	11.6	8.4	3.0	0.2	3.5	.	15.1
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
553+554+5	Restaurants, bars, canteens and catering													
	AT	7.2	5.3	1.9	0.9	5.2	-15.5	5.1	4.7	0.4	4.4	6.8	-22.2	3.9
	Europe	.	.	.	.	.	.	3.9	2.9	1.0	1.2	0.8	.	.
554	Bars													
	AT	6.8	6.2	0.5	0.5	7.2	-36.9	4.1	8.6	-4.1	7.6	14.3	-3.5	-9.2
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
555	Canteens and catering													
	AT	8.5	7.3	1.1	-0.3	-1.0	51.4	6.9	5.9	0.9	1.6	-4.1	-42.1	-12.0
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
553	Restaurants													
	AT	7.1	5.1	2.0	1.0	5.2	-18.2	5.0	4.4	0.6	4.5	6.7	30.8	4.8
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.

Table 14/continued

NACE	NACE description	1997-2005 Value added	Employ-ment	Produc-tivity	Unit labour costs	Enter-prises	1997-2004 Export	2000-2004 Value added	Employ-ment	Produc-tivity	Unit labour costs	Enter-prises	Export	98-00/01-03 Share in number of newly entered firms
Low intrinsic tradability, strong regulation in mode 3 and moderate regulation in mode 4														
641	Post and courier activities													
	AT	61.4	50.4	7.3	1.1	6.1	56.5	-2.1	-5.5	3.6	-1.8	0.9	45.2	-0.6
	Europe	.	.	.	.	.	.	2.0	0.6	1.3	-1.0	9.9	.	.
453	Building installation													
	AT	3.9	0.8	3.1	-0.6	3.8	4.4	4.4	0.8	3.6	-1.2	5.4	2.1	-2.8
	Europe	.	.	.	.	.	.	1.6	-0.5	2.1	-1.0	1.3	.	.
454	Building completion													
	AT	2.2	1.2	1.0	-0.8	4.2	-7.8	0.0	1.8	-1.8	0.9	7.3	-22.1	4.2
	Europe	.	.	.	.	.	.	2.3	0.4	1.9	-1.8	2.0	.	.
502	Maintenance and repair of motor vehicles													
	AT	1.3	0.8	0.5	1.7	2.1	13.4	-0.4	0.9	-1.3	4.0	4.4	14.1	15.4
	Europe	.	.	.	.	.	.	4.5	2.3	2.1	0.3	1.3	.	.

Source: ST.AT, Eurostat, Austrian social security files, own calculations. - Note: Europe = Belgium, Germany, Denmark, Finland, France, Italy, Norway, Sweden and UK.

5.3 Detailed analysis for strongly regulated sectors

Within the group of tradable sectors we find financial services as well as sea and air transport services. All these sectors exhibit positive sector characteristics in the sense that they are either knowledge or software intensive and thus are important for a country in the process of upgrading and international specialisation. Monetary intermediation (651) is by far the most important sector within this group of services, with an employment share of 4% and a value added share of 10%.

Again, Eurostat's New Cronos Database lacks the data to compare the Austrian position to that of other countries. Complementing our sample with data from the EUKLEMS database, and performing a comparison to a reference group of five European countries (Germany, Finland, France, Italy and the Netherlands) reveals a weak and deteriorating competitive position of total financial services (650) coupled with low growth in value added and employment.

From the more detailed data on Austria we find that that productivity growth for the sector of monetary intermediation (651) as well as other financial intermediation services (652) was below the average across all service sectors in Austria over the period 2000-2004. Productivity increased above average in activities auxiliary to financial intermediation (671).

Transport services via pipelines (603) exhibit a good competitive position as well as dynamic growth in value added. With only about 100 employees it is a very small sector, however.

Austrian water transport services (610) are characterised by low productivity levels and a bad competitive position as measured by relative unit labour costs. This is also a sector that only plays a minor role in both total services employment and output.

Air transport (620) is a more important sector. Its productivity however is lower than in the average European country and unit labour costs are also well above the average across Europe. Moreover, competitiveness deteriorated over the period 2000 – 2004. Overall it is a shrinking sector with decreasing value added and employment.

Strongly regulated sectors with low intrinsic tradability are railway transport (601) and real estate and letting services (700). Real estate activities account for an employment share of about 2% and a share in total service sector value added of 5.4%. They hold a good competitive position and growth was dynamic. The railway sector was characterized by a reduction in employment at a yearly rate of about 3% over 2000 to 2004, increasing investments and productivity improvements. Despite employment reductions and a decline in the employment share of railway services from 4.6% in 1995 to 2.6 in 2004 Austria is still much more specialised in railway services than the most of the countries compared. Productivity levels in the Austrian railway services were higher in 2004 than in the average.

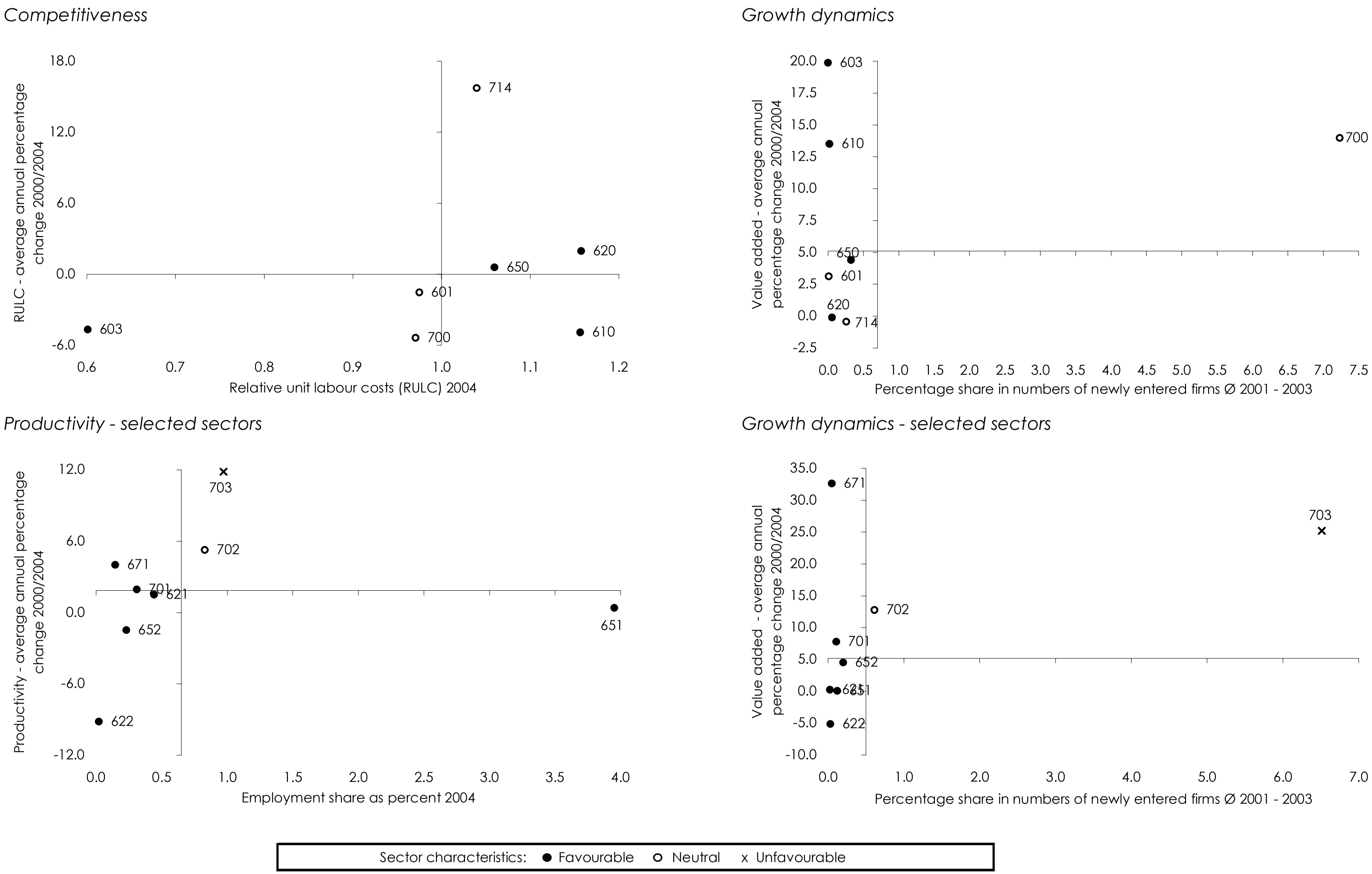
Table 15: Competitiveness and growth dynamics in the Austrian service sectors - Strongly regulated market access

	1 *Good competitive position and gain in competitiveness*	2 *Good competitive position and losing competitiveness*	3 *Competitive disadvantage and gain in competitiveness*	4 *Competitive disadvantag and losing competitiveness*
Dynamic growth with high share of new firm entrie				
Low intrinsic tradability	0 700* Real estate			
Dynamic growth with low share of new firm entries				
Internationally tradable	+ 603 Transport via pipelines		+ 610 Water transport	
Low growth and low share of new firm entries				
Internationally tradable				+ 620* Air transport + 650* Financial services
Low intrinsic tradability	0 601 Railways			0 714 Renting of househ. goods

	1 *High productivity growth*	2 *Low productivity growth*
Dynamic growth with high share of new firm entries		
Low intrinsic tradabilty	0 702 Letting of own property - 703 Real estate - fee or contr.basis	
Dynamic growth with low share of new firm entries		
Internationally tradable	+ 671 Acivities auxil. to fin. intermed. + 701 Real estate - own property	
Low growth and low share of new firm entries		
Internationally tradable		+ 621 Sched. air transport + 622 Non-sched. air transport + 651 Monetary intermediation + 652 Other financial intermed.

* 620=621+622; 650=651+652; 700=701+702+703.

Figure 4: Competitiveness and growth dynamics of strongly regulated sectors by sector characteristic



Source: ST.AT, Eurostat, Austrian social security files, own calculations.

Table 16: Structural characteristics and performance indicators of strongly regulated market access sectors by industry, 2004

NACE	NACE description	Value added share	Employ-ment share	Produc-tivity	Unit labour costs	Export share in sales	Share in employment of newly entered firms[1])	Share in number of newly entered firms[1])
		As percent		1.000 €			As percent	
Internationally tradable, with low coverage or highly regulated								
62	Air transport							
	AT	0.6	0.5	59.8	101.9	0.7	0.1	-0.2
	Europe	0.7	0.5	68.2	88.0	.	.	.
622	Non-scheduled air transport							
	AT	0.0	0.0	73.4	56.8	5.2	0.0	4.8
	Europe	.	.	.	.	.	.	.
621	Scheduled air transport							
	AT	0.5	0.4	59.1	104.7	0.2	0.1	-2.3
	Europe	.	.	.	.	.	.	.
623	Space transport							
	AT	.	.	.	.	.	.	.
	Europe	.	.	.	.	.	.	.
701	Real estate activities with own property							
	AT	0.6	0.3	96.5	34.6	0.2	0.1	-0.5
	Europe	.	.	.	.	.	.	.
603	Transport via pipelines							
	AT	0.1	0.0	991.8	7.8	.	0.0	6.7
	Europe	0.1	0.0	403.5	13.0	.	.	.
611+612	Sea and coastal water transport, inland water transp.							
	AT	0.0	0.0	87.2	37.2	.	0.0	1.0
	Europe	0.8	0.3	149.5	32.1	.	.	.
65	Financial intermediation, except insurance and pension funding							
	AT	10.9	4.2	130.7	48.8	.	0.3	-0.7
	Europe	.	.	.	.	.	.	.
651	Monetary intermediation							
	AT	10.1	4.0	127.8	49.5	.	0.2	-0.9
	Europe	.	.	.	.	.	.	.
671	Acivities auxiliary to financial intermediation, except insurance and pension funding							
	AT	0.2	0.1	69.0	56.8	.	0.1	4.2
	Europe	.	.	.	.	.	.	.
652	Other financial intermediation							
	AT	0.8	0.2	181.0	40.3	.	0.2	-0.2
	Europe	.	.	.	.	.	.	.
Low intrinsic tradability, low coverage in mode 3 and mode 4								
601	Transport via railways							
	AT	2.9	2.6	55.2	80.3	.	0.0	1.2
	Europe	0.9	0.8	53.1	82.4	.	.	.
70	Real estate activities							
	AT	5.4	2.1	127.3	20.9	2.3	7.7	-2.0
	Europe	6.4	2.9	105.2	21.6	.	.	.
702	Letting of own property							
	AT	3.8	0.8	227.2	12.3	1.5	0.6	3.6
	Europe	.	.	.	.	.	.	.
714	Renting of personal and household goods n. e. c.							
	AT	0.2	0.2	45.6	43.8	2.0	0.3	-0.4
	Europe	0.2	0.2	46.9	42.1	.	.	.
703	Real estate activities on a fee or contract basis							
	AT	1.0	1.0	52.1	45.1	8.3	7.0	-2.2
	Europe	.	.	.	.	.	.	.

Source: ST.AT, Eurostat, Austrian social security files, own calculations. - Note: Europe = Belgium, Germany, Denmark, Finland, France, Italy, Norway, Sweden and UK. - 1) Ø 2001/2003.

Table 17: Dynamics across sectors with strongly regulated market access (average annual percentage change)

NACE	NACE description	1997-2005 Value added	1997-2005 Employ-ment	1997-2005 Produc-tivity	1997-2005 Unit labour costs	1997-2005 Enter-prises	1997-2004 Export	2000-2004 Value added	2000-2004 Employ-ment	2000-2004 Produc-tivity	2000-2004 Unit labour costs	2000-2004 Enter-prises	2000-2004 Export	98-00/01-03 Share in number of newly entered firms
Internationally tradable, with low coverage of highly regulated														
62	Air transport													
	AT	1.3	3.6	-2.2	4.7	8.4	-11.7	-0.1	-1.0	0.9	5.4	9.8	-18.2	33.3
	Europe	.	.	.	.	.	.	-1.1	-1.2	0.2	3.4	1.0	.	.
622	Non-scheduled air transport													
	AT	-1.0	2.7	-3.6	-0.5	8.2	35.5	-5.2	4.4	-9.2	13.8	8.9	69.8	38.1
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
621	Scheduled air transport													
	AT	1.6	3.7	-2.1	4.8	10.7	-25.2	0.3	-1.2	1.5	4.9	21.8	-38.9	34.8
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
623	Space transport													
	AT	.	.	.	.	.	.	.	.	.	.	.	.	.
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
701	Real estate activities with own property													
	AT	1.6	3.8	-2.1	0.6	17.6	-17.1	7.8	5.7	1.9	-3.5	18.9	-12.9	-10.8
	Europe													
603	Transport via pipelines													
	AT	19.9	-2.4	22.9	-16.7	12.1	.	19.9	-2.3	22.7	-16.4	18.9	.	.
	Europe	.	.	.	.	.	.	36.5	13.5	20.3	-12.3	-8.5	.	.
611+612	Sea and coastal water transport, inland water transp.													
	AT	3.0	5.2	-2.0	1.6	1.0	.	13.5	6.3	6.8	-10.2	2.9	.	15.4
	Europe	.	.	.	.	.	.	16.5	5.4	10.5	-5.5	5.3	.	.
65	Financial intermediation, except insurance and pension funding													
	AT	2.9	-0.1	3.0	-0.5	-1.1	.	0.4	0.0	0.4	1.9	-0.9	.	-18.0
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
651	Monetary intermediation													
	AT	2.2	-0.3	2.5	-0.1	-2.1	.	0.1	-0.3	0.4	1.9	-1.5	.	3.3
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
671	Acivities auxiliary to financial intermediation, except insurance and pension funding													
	AT	35.5	24.0	9.3	-2.5	31.2	.	32.6	27.5	4.0	-2.1	37.4	.	19.2
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
652	Other financial intermediation													
	AT	12.9	3.9	8.7	-6.2	5.0	.	4.5	6.1	-1.5	2.2	1.9	.	-29.7
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.

Table 17/continued

NACE	NACE description	1997-2005 Value added	1997-2005 Employment	1997-2005 Productivity	1997-2005 Unit labour costs	1997-2005 Enterprises	1997-2004 Export	2000-2004 Value added	2000-2004 Employment	2000-2004 Productivity	2000-2004 Unit labour costs	2000-2004 Enterprises	2000-2004 Export	98-00/01-03 Share in number of newly entered firms
Low intrinsic tradability, low coverage in mode 3 and mode 4														
601	Transport via railways													
	AT	-12.1	-14.9	3.2	1.2	10.2	.	3.1	-2.8	6.1	-2.9	3.4	.	-28.6
	Europe	.	.	.	.	.	.	-0.9	-3.7	2.9	-1.4	-0.1	.	.
70	Real estate activities													
	AT	12.8	9.7	2.8	-3.7	20.4	27.3	14.0	9.0	4.6	-5.6	22.8	7.8	32.7
	Europe	.	.	.	.	.	.	6.0	4.0	2.0	-0.2	6.5	.	.
702	Letting of own property													
	AT	13.1	6.9	5.8	-6.6	25.8	38.9	12.7	7.1	5.3	-6.2	28.5	-6.3	-3.1
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.
714	Renting of personal and household goods n. e. c.													
	AT	3.5	4.7	-1.2	4.7	3.8	-12.8	-0.4	6.3	-6.4	14.5	4.0	-7.9	-17.6
	Europe	.	.	.	.	.	.	4.6	1.8	2.7	-1.1	3.8	.	.
703	Real estate activities on a fee or contract basis													
	AT	23.8	16.0	6.7	-5.3	17.0	33.2	25.2	11.9	11.8	-10.8	18.6	34.9	38.2
	Europe	.	.	.	.	.	.	.	.	.	.	.	.	.

Source: ST.AT, Eurostat, Austrian social security files, own calculations. - Note: Europe = Belgium, Germany, Denmark, Finland, France, Italy, Norway, Sweden and UK.

6. Summary and Conclusions

This study provided a thorough and detailed analysis of the competitiveness of the Austrian service sectors. It combined several industry classifications developed at the Austrian Institute of Economic Research (WIFO) reflecting different structural features and international regulatory regimes that might be relevant for a sector's export potential and international competitiveness. These features are the skill and factor intensity, the intrinsic tradability and the different degrees of openness to services trade as reflected by the willingness of countries to submit full or partial commitments under the GATS. In any analysis of services it is particularly important to recognize that the importance of an efficient and internationally competitive service sector goes far beyond its direct contribution to production and foreign trade. Producing intermediate inputs for many other sectors it contributes to the efficiency in large parts of the economy and influences the export performance of many manufactured goods as well. This even more so as knowledge and ideas, specialized and customized solutions increasingly become the key factors in shaping competitiveness.

From the policy perspective, knowledge of what are the major barriers to trade, which sectors are potentially most affected by international trade regimes as well as what are the major strengths and weaknesses of the domestic service sector is vital. Such understanding enables governments to evaluate the relative positions and may feed into the development of priorities in economic policy and in international negotiations on the liberalisation of services.

Clearly, the knowledge and skill intensive service industries (KIBS) such as computer services, R&D as well as many of the business services are expected to play a key role. Not only because they are themselves important producers of new technologies (computer, software, R&D) or carriers of information and knowledge (training, consultancy), but also because they represent the most dynamic category of services in production and in international trade, and exhibit the largest market potentials in many of the advanced countries. At the same time international competition is fierce in many of these service categories and the strong presence of "external economies of scale" promotes the clustering of services in a few locations and centres. In the modern service sectors these externalities arise because of knowledge spillovers, and the availability of specialized skills. These agglomeration economies[11]) generate a self - reinforcing process in which service centres develop competitive and comparative strengths that are difficult to imitate by others. Rather it will be important for firms, to follow a niche strategy and for economic policy, to promote and build

[11]) The concentration of economic activity in one place itself creates a favourable economic environment that supports further concentration and the spatial concentration becomes a self-reinforcing process. The clustering of financial services in London, New York or Tokio is a popular example, as well as the spatial concentration of R&D activities in Silicon Valley).

up the existing strengths. At the same time it seems important to foster and back up service sectors that are possibly underrepresented and competitively disadvantaged, but important knowledge creating and knowledge transmitting inputs for the rest of the economy.

The analysis of the Austrian service sector finds a clear dominance of activities characterized by unfavourable sector characteristics in terms of skills and factor inputs. This is especially true in sectors facing a relatively liberal trade regime and reflects Austria's rather strong reliance within these sectors on tourism, land transport, retail sale and building activities. Furthermore, the structural change towards high-skilled labour intensive and knowledge intensive service sectors was found to be rather slow. The evidence on the competitiveness of skill intensive service sectors was mixed. The results were most favourable for high-skill intensive sectors within the group of medium regulated industries, they were most unfavourable for skill intensive sectors faced with highly regulated trade regimes. Skill intensive sectors within the group of liberalized industries held a weak competitive position which was mainly due to a gap in productivity. This gap had been narrowing over time.

Results for the high-skilled and knowledge intensive service sectors

- At the detailed sector level, the analysis highlighted "consultancy, legal, accounting, book - keeping and market research services", the "renting of machinery and equipment sector ", as well as "engineering, architectural activities and technical testing and analysis" as the most promising fields of activity in the group of sectors already facing a relatively liberal international trade regime. All of these sectors combined a good and advancing competitive position with dynamic growth. For the telecommunications sector we found a minor competitive disadvantage in terms of its relative unit labour cost position and a rather large, but narrowing productivity gap to other European countries. The results were less favourable for the group of computer services for which the data revealed dynamic growth with a high share of new firm entries but a weak and further deteriorating competitive position. The more detailed sector analysis revealed a less alarming picture for software and hardware consultancy. In both of these sectors productivity increased strongly while the productivity performance was poor in data processing and database activities.
- Within the group of sectors facing medium regulated trade regimes the analysis identified the R&D sector as well as "renting of automobiles and other transport equipment" as the most promising fields of relatively high-skilled intensive activities. In both cases, a very dynamic development was paired with a good, but deteriorating competitive position. Insurance services were found to hold a weak and strongly deteriorating competitive advantage in terms of relative unit labour costs. At the same time the productivity gap to some of the European countries was found to be extremely wide.

- Financial services are among the sectors facing the most regulated international trade regime. The data suggested a rather weak growth performance as well as a weak and deteriorating competitive position.

Obviously, a large part of skill intensive producer services such as accounting, bookkeeping, legal, consulting and market research services, engineering, architectural activities and technical testing and analysis and a number of services related to information and communication technologies (ICT) already face a relatively liberal trade regime according to the GATS. In such a situation relative costs and productivity, quality and innovative strengths will be the key factors to determine the future expansion of production and trade. Other high skilled business services such as R&D related activities, insurance and financial intermediation are potentially most affected by international trade regimes. Trade liberalisation might be expected to have a larger impact on growth as well as the efficiency of these sectors. Measures fostering the efficiency and competitiveness of the service sectors will have to be accompanied by negotiations towards more liberal market access.

While the focus of economic policy for the reasons noted, will have to be put on supporting the expansive strategies of the knowledge and skill intensive business services this will have to be attended by policies targeted at the more traditional service sectors that are characterized by unfavourable sector characteristics but are still strongly represented in the Austrian service sector. Due to factor intensities most of these services are vulnerable to low wage competition, especially from the nearby East-Central European countries. While in some specific instances policy will have to cushion negative impacts on the labour market due to competition and structural change, the main focus must lie in an offensive and active strategy focusing on upgrading measures and the strengths and opportunities of those sectors. The analysis identified tourism, transport, retail sale and the building sector as the most important activities within this group of traditional sectors.

Results for traditional service sectors with a high representation in the Austrian service sector

- Among the traditional service sectors, tourism is one of the most important in terms of employment creation and a sector in which Austria may develop and further strengthen comparative advantages in winter tourism, city and cultural tourism as well as short holidays offering special experiences. While the sector as such is characterized by very low productivity levels and very low wage levels, the analysis found a relatively favourable picture on an international scale. Further upgrading, a stronger focus on quality, extensions to full-year seasons and the development of new markets (North America, China, Russia, new EU member states) will be the core measures to secure the competitiveness of this sector in the future. A deeper analysis as well as the main policy conclusions for the sector can be found in the WIFO White Paper (*Smeral*, 2006) as well as *Smeral* (2007).

- The transport sector subsumes a number of very heterogeneous activities such as land transport, water transport and air transport, but also a number of supporting transport activities such as cargo handling, travel agencies and other transport agencies. Most of employment within these sectors accrues from land transport, which is facing a relatively liberal international trade regime. For the Austrian land transport sector, the data revealed a good and advancing competitive position paired with dynamic growth and a high share of new firm entries. The results were less favourable for the supporting transport activities which belong to the group of sectors with a medium regulatory market access regime. While efficiency was found to be higher than in other European countries the unit labour cost position indicated a weak but shrinking competitive disadvantage. Both, water transport and air transport are representatives of the group of sectors with strongly regulated trade regimes and were identified as sectors with weak international competitiveness.
- The building sector also comprises a very heterogeneous set of activities reaching from the mostly medium sized construction firms to the very small scaled "supporting" building activities within the subsectors building completion and installation completion. Finally, site preparation (planning and project management) and the renting of construction equipment include some of the more skill and capital intensive activities.
- Building of constructions was identified as a relatively liberalized sector, exhibiting a competitive disadvantage that was shrinking over time. Building installation and building completion activities facing a medium regulatory trade regime were found to have higher productivity, but no competitive advantage in comparison to some of the other more advanced European countries in terms of unit labour costs. Furthermore, the competitive edge of low cost East Central European countries (CEEC) was found to be lower than expected. The still huge productivity differences outweigh much of the advantages stemming from low labour costs in these competitor countries. While this sector will continue to be characterized by a high vulnerability to the competition of the CEEC, the opportunities of Austrian firms, at least in the medium run and at least in some of the larger firms possessing enough management and planning capacities, will specifically come from participating in some of the big infrastructural projects that are and will be launched in the New Member States within the budget of the EU structural funds.
- The retail sector is facing a relatively liberal international regulatory regime. The two most important subsectors in terms of employment and value added are retail sales in specialized and non-specialized stores. In both of these sectors, the analysis presented a positive picture in terms of productivity compared to other European countries, but a very low cost competitiveness.

It will be important that policies supporting traditional service sectors will not come at the cost of the knowledge and skill intensive business services which are the backbone for any advanced economy. Some of the most important elements supporting the expansion and internationalisation of service sectors in general and the knowledge and skill intensive service sectors in specific were highlighted in the WIFO White paper (*Wolfmayr – Kratena – Mayerhofer - Stankovsky*, 2006). The most important may be summarized as follows:

- The promotion of foreign direct investments: Many service sectors are characterized by low intrinsic tradability, and foreign affiliates in the target market are the basis for the export of these services. Monetary support, however, must be accompanied by consulting and information on internationalisation strategies and assistance in the cross-border search for partners. This seems particularly important for the smaller service firms which often lack the respective human and management capacities and the specific know-how.
- Publicly supported consultancy and help in finding of specific niche strategies and the diffusion of experiences and "best practices", paired with incentives for specialised professional development and awareness-building among small and medium-sized service enterprises.
- A reduction of regulatory barriers hindering the development of multi-disciplinary, integrated total solutions in the export business, which seems particularly important in the business sector activities.
- Measures to enhance the qualification and educational attainment of service employees as well as the adaptation of the dual system of vocational training (apprenticeships) to new job and occupational profiles. This seems especially important in the area of computer services.
- A continuous review of the innovation and R&D promotion system with regard to its capability to foster efficiency enhancing innovations in the service sector. Three aspects seem to be especially important: (i) the importance of immaterial, non-technological aspects of many innovations in the service sector (work organisation and co-ordination, management innovations, etc.); (ii) the dominance of externally developed, "purchased" innovations and R&D and (iii) a lack of firm specific know-how in the planning and organization of the implementation of innovation projects especially in the small sized services firms.

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