The Economic Contribution of Copyright-Based Industries in South Africa

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WORLD INTELLECTUAL PROPERTY ORGANIZATION (WIPO)
IN COOPERATION WITH THE REPUBLIC OF SOUTH AFRICA

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Foreword

by Dr. Rob Davies, Minister of Trade and Industry

In 2010 the Department of Trade and Industry (the DTI) commissioned a study through the World Intellectual Property Organization (WIPO). The research study would indicate whether there are any benefits coming from copyright-based industries in South Africa. The reason for commissioning these studies was solely based on the fact that South Africa wants to accede to treaties in the area of copyright and the South African Parliament indicated that before any treaty could be acceded to the country needs to know what benefits come from these treaties as becoming a signatory to a treaty entails attracting obligations and amending the legislation.

With the final report of the studies being submitted by WIPO, I am of the view that:

The studies give a clear indication on whether or not there is any benefit for South Africa in joining or not joining international treaties.

- It is clear that South Africa should improve its internal copyright legislation as it is over three decades-old.
- The methodology used in conducting the study is not disputed by the DTI.
- The absence of data from Statistics South Africa is problematic especially with the reliance on data from privately managed databases may be misleading as this data has not been proven to be reliable.
- The treatment of Intellectual Property (IP) as a non-sector renders the recognition of copyright as a sub-sector of IP non-existent or sterile.

Notwithstanding the above:

- The report is an eye opener. It will assist the country in treating IP as a sector and this will be judged by its contribution to the economy as laid out in the report.
- This is an indictment to the state to put systems in place that will assist in improving the contribution of copyright/IP to the Gross Domestic Product.
- Statistics South Africa, the South African Revenue Services and privately owned associations that collect data on IP should strive for perfect/proper data gathering in this sector.
- The report enables the state to allow innovation in trade and education as well as profit making and the development of incentive schemes in the area of copyright e.g. film and music and to allow limitations and exceptions.

It is my view that when all is done, there will be economic growth, job creation and respect for IP as it contributes to the social good. In regards to the above it is in the best interest of the DTI to note the findings of the study.

The publication of the findings of this study represents a very important milestone for South Africa as it clearly indicates the areas we need to improve on in terms of legislation on the protection and enforcement of copyright.

It is with great pleasure therefore that I present to you the findings of the commissioned study on "Benefits coming from Copyright-Based Industries". The DTI and relevant stakeholders will engage in a consultative process that will consider the recommendations.

January 4th, 2012

Executive Summary

The creation of new knowledge in a competitive economy is dependent to a significant extent on the protection of the intellectual property (WIPO, 2004[1]). Copyright law should be effective in promoting and encouraging the creation of and investment in creative works.

Copyright law protects specific expression, not general ideas, and applies to literary, artistic, dramatic and musical works, sound recordings, broadcasts and films. Copyright law protects the way in which the work is expressed, rather than the idea behind the work. Dan Brown's *The Da Vinci Code* (2003)[2] was recently found not to have infringed the copyright of an earlier book which contained many of the theories found in *The Da Vinci Code*. Drawing on ideas of other copyrighted works does not infringe those copyrights.

Industries based on copyright and related rights are believed to have considerable impact on the national economies. However, measuring their relevant contribution is only a recent phenomenon. This document reports an effort to estimate the contribution of the copyright industries in South Africa. The investigation has been requested by the government of South Africa (Department of Trade and Industry (DTI)) with financial and technical support from WIPO and in light of the increasing importance of copyright goods and services to the country's economy. It is important to emphasise that this investigation is the first using WIPO-based methodology to be conducted in South Africa and the second, after Kenya, to be completed in the Africa region.

It is expected that the results of the investigation will provide robust data on the actual economic contribution of the copyright-based activities, which can serve as a basis for adjusting policies and strategies aimed at promoting growth and development in the country's copyright-based sectors.

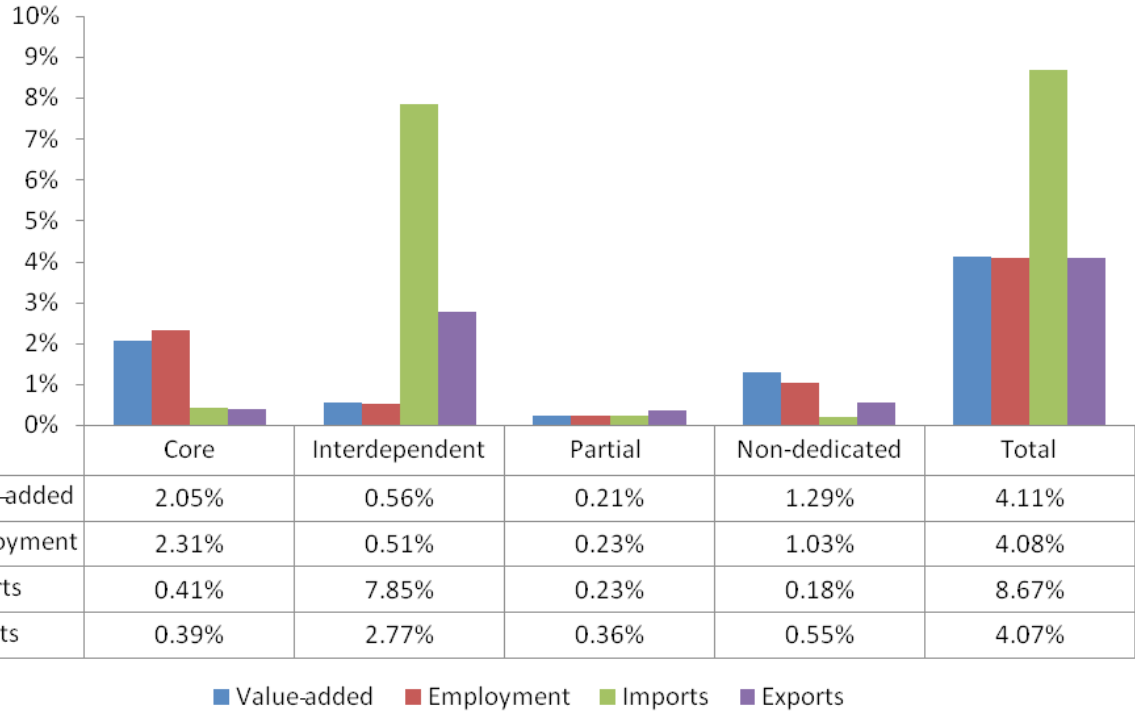
Similar investigations quantifying the economic contribution of the copyright-based industries of developed and developing economies indicate the importance of these industries. The total economic contribution of copyright-based industries as a percentage to GDP varies from 2.81% in Bulgaria to 11.70% in Philippines. Similarly the indicator ratio of persons employed in the copyright-based sector to the total number of employees in the economy varies from 3.03% in Jamaica to 11.17% in Latvia.

The results of this investigation indicate that the indicators for the South African copyright-based industries fall within the overall range of the international studies, albeit in the low range. The South African copyright-based industries contribution to GDP is 4.11% and to employment 4.08%. Nevertheless the results of this study show that the overall contribution of the copyright-based industries is substantial enough to stipulate increased attention by the South African policy-makers. Figure A presents the overall contribution of copyright-based industries in South Africa in 2008 with regard to their value-added, employment, imports and exports.

[1] World Intellectual Property Organization (WIPO), 2006 "*National Studies on Assessing the Economic Contribution of the Copyright-Based Industries No1: the economic contribution of copyright-based industries.*" WIPO: Switzerland. Countries: Latvia (2000), Singapore (2004), Canada (2004), Hungary (2005).

[2] Brown D. (2003) "*The Da Vinci Code*", Doubleday, USA.

Figure A: Contribution of Copyright-Based Industries to the South African Economy in 2008



	Core	Interdependent	Partial	Non-dedicated	Total
Value-added	2.05%	0.56%	0.21%	1.29%	4.11%
Employment	2.31%	0.51%	0.23%	1.03%	4.08%
Imports	0.41%	7.85%	0.23%	0.18%	8.67%
Exports	0.39%	2.77%	0.36%	0.55%	4.07%

Source: Authors' calculations with data from the Department of Labour (DoL), the Department of Arts and Culture (DAC), Quantec databases, the South African Reserve Bank (SARB) and the South African Revenue Service (SARS).

In 2008, with regards to value-added, the copyright-based industries in total are responsible for almost 4.11% of the total economy, with the core copyright-based industries being the highest contributor (2.05%) and the non-dedicated copyright-based following with 1.29%. As far as employment is concerned, 4.08% of the workforce is employed in the copyright-based industries, the majority of which is employed in the core and non-dedicated copyright-based industries (2.31% and 1.03%). The interdependent copyright-based industries show a high contribution in the exports of the economy (2.77%) and an even higher contribution to the total imports (7.85%).

Apart from the high growth of the specific industries' value-added, their contribution also presented a significant increase until the 1980s. From that point onwards, the trend varied little moving in the range from 4 to 4.5% (figure B).

Figure B: Evolution of Contribution of Copyright-Based Industries to Total Value-Added, Employment, Imports and Exports

Source: Authors' calculations with data from the Department of Labour (DoL), the Department of Arts and Culture (DAC), Quantec databases, the South African Reserve Bank (SARB) and the South African Revenue Service (SARS).

The percentage of workforce employed in the copyright-based industries to the total has almost doubled in the period from 1970 to 2008, from less than 2% at the beginning of the period to almost 4% in 2008 (figure B). The copyright-based industries were responsible for around 8 to 10% of the country's imports (figure B), presenting a spike in 1983 but coming back in the range afterwards. The sector's exports showed a significant rise since the end of the 1980s.

Table A presents the values of all the copyright-based sectors examined in this study for four indicators: real value-added, employment, exports and imports, after the implementation of copyright factors in the calculations.

Table A: Real Value-Added, Employment, Exports and Imports for all Copyright-Based Industries for 2008

Year 2008	Real value-added	Employment	Exports	Imports
	R millions (2005=100)	Number of employees	R millions (2005=100)	R millions (2005=100)
TOTAL ECONOMY	**1,620,139**	**10,376,881**	**495,382**	**572,354**
Total CBI	**66,101**	**422,974**	**20,168**	**48,051**
Core Copyright-Based Industries	**32,670**	**239,959**	**1,954**	**2,359**
Printing, Publishing and Recorded Media	7,588	53,465	790	2,009
Film and Television Industry	6,811	30,899	–	–
Photography, Software and Databases, Advertising	18,271	155,595	1,165	350
Interdependent Copyright-Based Industries	**9,091**	**52,620**	**13,745**	**43,324**
Photographic and Cinematographic Instruments	15	–	–	–

Table A: Real Value-Added, Employment, Exports and Imports for all Copyright-Based Industries for 2008 (Continued)

Television, Radio and Communication Equipment	944	2,632	994	9,557
Computers and Equipment, Photocopiers	5,442	40342	11,138	33,767
Paper and Paper Products	2705.55	9646	1,612	1,595
Partial Copyright-Based Industries	**3,426**	**23,879**	**1,767**	**1,321**
Apparel, Textiles and Footwear	45	472	8	72
Furniture and Other Manufacturing	2,418	9,405	1,755	1,237
Crafts	949	13,938	–	–
Glass and Glass Products	14	63	3	11
Non-Dedicated Copyright-Based Industries	**20,913**	**106,516**	**2,702**	**1,046**
General Wholesale and Retailing	11,685	85,796	1,049	5
Transport, Storage and Communication	9,229	20,720	1,654	1,041

Source: Authors' calculations with data from the Department of Labour (DoL), the Department of Arts and Culture (DAC), Quantec databases, the South African Reserve Bank (SARB) and the South African Revenue Service (SARS).

This study uses a complete Input-Output (I-O) analysis calculating multipliers to show not only the direct effects of the copyright-based industries but also their indirect effects to the economy's output, income, employment and imports. The results, as presented in table A and in detail in appendix 4, depict significant effects of the core copyright-based industries to the above-mentioned indicators with the exception of imports. The total direct effect (contribution) of the copyright-based industries in terms of value-added is 4.11% while their total[3] indirect effect (contribution) in terms of output would be 5.49% (production-induced effect[4]). On the other hand, with regards to employment, the total direct effect is 4.08%, while its production-induced effect (contribution) would be 14.52% (sum of the first-round and the industrial support effects).[5]

Table B: Production-Induced Effect of Copyright-Based Industries (Input-Output 2009)

Industry	Production-induced effect	Adjusted for copyright factors	Production-induced effect	Adjusted for copyright factors
	Outcome		Employment	
Communication	1.18%	1.18%	2.73%	2.73%
Crafts*	0.76%	0.04%	2.87%	0.16%
Film and television*	1.60%	0.67%	2.98%	1.25%
Footwear	2.08%	2.08%	6.23%	6.23%
Furniture	1.93%	0.01%	6.48%	0.03%
Glass and glass products	1.49%	0.15%	4.89%	0.49%
Computers and equipment/ photocopiers	1.70%	0.00%	4.93%	0.00%
Other manufacturing	1.23%	0.43%	3.65%	1.28%
Photography/ Software and Databases/ Advertising	1.13%	0.00%	2.97%	0.00%
Paper and paper products	2.02%	0.50%	5.77%	1.44%
Printing, publishing and recorded media	1.79%	1.79%	5.17%	5.17%

[3] It should be noted that the analysis of the indirect effect includes all the copyright-based industries except for 'film and television' and 'crafts' for which we made appropriate assumptions.

[4] Production-induced effect is the combination of first-round and industrial support effects. First-round effect is how much an industry must increase its inputs from other industries and from itself, in order to produce an extra unit of output to meet a ZAR1.00 increase in final demand. Industrial support effect is how much other industries will need to increase their purchases to expand their output to meet the first-round requirements.

[5] Input-Output analysis portrays the results of a change in the whole economy until equilibrium is restored again. The time period is not determined.

Table B: Production-Induced Effect of Copyright-Based Industries (Input-Output 2009) (Continued)

Television, radio and communication equipment	1.64%	0.57%	4.75%	1.66%
Textiles	1.81%	0.01%	6.05%	0.02%
Transport and storage	1.19%	0.07%	3.02%	0.17%
Wearing apparel	1.59%	0.01%	6.19%	0.02%
Wholesale and retail trade	1.00%	0.06%	2.63%	0.15%
Total		**7.56%**		**20.81%**

Where * denotes industries with figures by extrapolation.
Source: Authors' calculations with data from the Supply and Use Tables (SUT) of Statistics South Africa (Stats SA).

An example is the 'printing, publishing and recorded media' – one of the most influential copyright-based industries: although its direct effect (contribution) to total value-added would be 0.47%, its indirect effect would be 1.8% (production-induced effect). The same industry's direct effect (contribution) to employment is 0.52% while its indirect effect would be 5.17%. The multipliers will assist the policy makers to evaluate the impact of promoting copyright-based industries.

If appropriate policies are implemented resulting in an increase of the demand for products, for instance of the same sector as in the previous example 'printing, published and recorded media', a series of links will occur affecting, through individual sectors, the economy in its entirety. If the demand for 'printing, published and recorded media' products increases by ZAR100,000 the industry must increase its inputs from other industries and from itself by R69,000 (first-round effects multiplier).

An increase in the 'printing, published and recorded media' industry will also influence other sectors in the economy. Among the inputs that 'printing, published and recorded media' will need in order to meet an increase in the demand is for example some form of energy, i.e. electricity. To cover the new demand for its product, the sector 'electricity, gas and steam' will have to increase their inputs by ZAR0.465 for every ZAR1.00 of demand. Similar effects will be experienced with the employment and trade of the sectors which are trying to meet the increased demand, they will affect various other industries by asking for inputs.

During the process of our investigation a number of questions were raised which lead to a number of recommendations at the end of the study. Indicatively, it is suggested that WIPO should identify international best practice in the promotion of copyright-based industries and disseminate the information to member states. Also, it is proposed that the Department of Trade and Industry (DTI) and the Department of Arts and Culture (DAC) request from Statistics SA and the Reserve Bank to separate the statistics related to copyright-based industries and publish them regularly. Among others, it is also advisable that DTI should develop a research programme supporting researcher initiated projects related to Intellectual Property Rights (IPR) in general and copyright in particular.

1. Introduction

Copyright exists to encourage the creation of, and investment in, creative works. It protects specific expression, not general ideas, and applies to literary, artistic, dramatic and musical works, sound recordings, broadcasts and films. Copyright law protects the way in which the work is expressed, rather than the idea behind the work, e.g. in 2006 a court in the United Kingdom ruled that Dan Brown's *The Da Vinci Code* (2003)[6] did not infringe the copyright of an earlier book, The Holy Blood and the Holy Grail, which contained some of the theories found in *The Da Vinci Code*. Drawing on ideas of other copyrighted works does not infringe those copyrights.

Copyright rights are inextricably linked to limitations[7], exceptions[8] and "compulsory" or "obligatory" licences[9]. Limitations, exceptions and licences exist in order to facilitate consumer access, the use for socially desirable purposes and to encourage further creativity.

The World Intellectual Property Organization[10] states "the juridical and policy basis for each kind of provision is different. The *limitations* proceed on the assumption that there are clear public policy grounds and that copyright protection should not exist in the works in question, for example because of the importance of the need for ready availability of such works from the point of view of the general public. The *exceptions* represent a more limited concession that certain kinds of uses of works that are otherwise protected should be allowed: there is a public interest present here that justifies overriding the private rights of authors in their works in these particular circumstances. In the *licences* the author's rights continue to be protected but are significantly abridged: public interest still justifies the continuance of the use, regardless of the author's consent, but subject to the payment of appropriate remuneration".

In determining where the appropriate balance lies between rights and exceptions, it is a basic principle of the Intellectual Property policy that the result should be in the public interest. In determining what is in the public interest the government must balance a number of often overlapping policy goals including economic, social, political and legal objectives and constraints.

Exceptions are of interest because like rights they have the potential to create value, employment and enhance the economic welfare of society.

Recently, the Gowers Review (2006)[11] proposed a number of recommendations for the improvement of the IP system. In this report, the UK argued that exceptions – among others – have the potentials to create value. The study suggests that the broader approach applied in the USA to copyright exceptions has opened up a commercial space for others to create value. For instance, it refers to Google's ability to 'cache' websites, effectively copying content without having to seek permission first; for many that is considered an unfair use of other people's copyrighted material. In this study, Google's explanation to the Call of Evidence can be found stating: "The existence of a general fair use exception that can adapt to new technical environments may explain why the search engines first developed in the USA, where users were able to rely on flexible copyright exceptions, and not in the UK, where such uses would have been considered infringement".

[6] Brown D. (2003) "*The Da Vinci Code*", Doubleday, USA.

[7] Provisions that exclude or allow for the exclusion of protection for particular categories of works or material may be described as "limitations" on protection, in the sense that no protection is required for the particular kind of subject matter in question. There are several instances of such provisions in the Berne Convention for the protection of literary and artistic works: for official texts of a legislative, administrative and legal nature (Article 2(4)), news of the day (Article 2(8)) and speeches delivered in the course of legal proceedings (Article 2*bis* (1)).

[8] Provisions that allow for the giving of immunity (usually on a permissive, rather than mandatory basis) from infringement proceedings for particular kinds of use, for example, where this is for the purposes of news reporting or education, where particular conditions are satisfied can be termed "permitted uses" or exceptions to protection, in that they allow for the removal of liability that would otherwise arise.

[9] "Compulsory" or "obligatory" licences allow a particular use of copyright material, subject to the payment of compensation to the copyright owner. Permissions are found in Articles 11*bis* (2) and 13 and the Appendix of the Berne Convention for the Protection of Literary and Artistic Works.

[10] WIPO (2003) "*WIPO Study on Limitations and Exceptions of Copyright and Related Rights in the Digital Environment*". Standing Committee on Copyright and Related Rights, Ninth Session, Geneva, June 23rd – 27th, 2003.

[11] Gowers Review (2006) "*Gowers Review of Intellectual Property*", HMSO, Norwich, NR3 1BQ.

Another example of 'fair uses' of copyright that can create economic value without damaging the interests of copyright owners is the film *West Side Story* that grossed $43.7 million ($39.9 million when adjusted for inflation). Although the film may be considered a reworking of *Romeo and Juliet*, its success indicates that works which build on others (and are not necessarily substitutes of the original work) can be extremely valuable. Indeed, it is not the case that *West Side Story* has made *Romeo and Juliet* less popular or less commercially successful"[12].

The value of copyright has traditionally been observed both in social and cultural terms. Also, with the continuous rising of the services sector, globalisation and the development of knowledge economy, the need for a copyright law and infrastructure underpinning a number of industries has been more imperative than ever.

Copyright in South Africa is legislated by the Copyright Act No. 98 of 1978[13] and its amendments.

Furthermore, the need to protect, support and promote the copyright-based industries has been re-emphasised in the strategic plan for "Cultural Industries"[14].

The "Cultural Industries" identified by the Department of Arts, Culture, Science and Technology (DACST) includes the music industry, the craft industry, the publishing industry and the film and television industry (the most essential core copyright-based industries). "Their selection was based on a number of criteria including the recognition that these sectors were identifiable industries in South Africa, are potentially internationally competitive and have the potential to create employment and offer opportunities for rural and urban job creation"[15].

Despite the importance of the cultural industries for South Africa there has been little, if any, analysis of the economic contribution and value of the country's copyright industries as a whole.

The objective of this study is to quantify the importance of copyright-based industries in South Africa and set them in an international context. More specifically the study aims to estimate the:

- contribution of the copyright-based industries to South Africa's Gross Domestic Product,
- share of national employment related to the country's copyright-based industries, participation of copyright-based industries in international trade.

The report is structured as follows: the next chapter provides an overview of the copyright activities in South Africa, the chapter "International Studies Estimating the Economic Contribution of Copyright Industries" provides a literature review emphasising the findings of WIPO's supported studies, the next chapter discusses the methodological as well as data selection and collection issues, while the chapter "The contribution of Copyright-Based Industries to the South African Economy" presents the findings of our analysis. The next section focuses on the Input–Output methodology and the results of such an analysis, while the next chapter focuses on the trade of copyright-based industries in South Africa. Finally, the last chapter provides a discussion and a number of policy recommendations for the future of the South African copyright-based industries.

[12] Ibid.
[13] Republic of South Africa (1978) "*Copyright Act of South Africa, No. 98, as amended through No.9 (2002)*", available at http://portal.unesco.org/culture/en/ev.php-URL_ID=15486&URL_DO=DO_TOPIC&URL_SECTION=201.html
[14] DACST (1998) " Cultural Industries Growth Strategy" Department of Arts Culture Science and Technology, Pretoria.
[15] Ibid.

2. Copyright in South Africa

Copyright in South Africa is legislated by the Copyright Act No. 98 of 1978[16] and its amendments.

Section 2 of the Act identifies that the following works are eligible for copyright:

(a) literary works,
(b) musical works,
(c) artistic works;,
(d) cinematographic films,
(e) sound recordings,
(f) broadcasts,
(g) programme-carrying signals,
(h) published editions,
(i) computer programs.

More specifically, for literary, musical and artistic works, except for photographs, the copyright term in South Africa is of fifty years from the end of the year of the author's death, or fifty years from publication if it is first published after the author's death. For photographs, films and computer programs, the term is fifty years from first publication, or fifty years from creation if not published within fifty years. For sound recordings, broadcasts, programme-carrying signals and published editions, it is fifty years from first publication or transmission.

Anonymous works are protected for shorter than fifty years from first publication and fifty years from the year when it is reasonable to presume the author is dead. For works with multiple authors, the fifty years from death are calculated from the death of the last author to die. Finally, government works are protected for fifty years from first publication.

Section 12 "General exceptions from protection of literary and musical works" (appendix 2) provides for a number of exceptions.

The Act has been criticised (Nicholson *et al.*, 2008)[17] in that:

- It does not have any provisions for persons with visual, aural or learning disabilities, or for distance learners and literacy training purposes.
- It does not address digitisation or preservation and curation in the digital environment to enable libraries and archives to carry out their mandates in terms of other Acts of Parliament.
- It has no provisions for adaptations, translations, parodies, broadcasts or public performances for non-commercial or educational purposes.

The authors expressed their concerns on several shortcomings of the Copyright Act which include its conflicts with Article 32 of the Constitution relating to right to access of state held information, absence of provisions catering for the rights to information of individuals with sensory-disabilities and the long and cumbersome process that an individual would need in order to reproduce multiple copies of government departmental publications which include public health related, public safety and security publications[18].

They suggest that "government departmental publications are subject to copyright, which means that the public would need copyright permission to reproduce multiple copies, beyond what is permitted in section 13. This means that the copyright law would require that important documents on health issues, such as HIV/AIDS, tuberculosis, malaria, hepatitis and other serious diseases, be cleared for copyright by, or through, relevant government departments, before being able to be reproduced for use by health workers in rural areas. In a pandemic, such as AIDS, this information should be in the public domain. Similarly, in view of the high levels of crime in this country, documents published by the Department of Safety and Security,

[16] Copyright Act 98 of 1978 Regulations as amended by Notice Government Gazette R.1211 9775, June, 7th 1985.
[17] Nicholson R. D. and Kawooya D. (2008) "*The Impact of Copyright on Access to Public Information in African Countries: a Perspective from Uganda and South Africa*". World Library and Information Congress: 74th IFLA General Conference and Council, August 10th – 14th, 2008, Québec, Canada, http://www.ifla.org/IV/ifla74/index.htm
[18] Ibid.

the South African Police Service and other government security enforcement agencies should be in the public domain."[19] Hence, it appears that they argue that there may also be discrimination against other sectors of society.

The WIPO study[20] (2008) on copyright limitations and exceptions for libraries and archives summarised South Africa's limitations and exceptions.

South Africa has introduced anti-circumvention provisions in its Electronic Communications and Transactions Act No. 25 of 2002 (Chapter xiii: Cybercrime, Clause 86). The Act is managed by the Minister of Communications. It is of importance, however, that the Act does not provide exceptions for legitimate purposes. Unlike traditional copyright law, which limits the term of protection, there is no limit to the term of protection accorded to a Technological Protection Measure (TPM), effectively extending the term of protection for works protected by a TPM indefinitely.

In an international context, South Africa is a party to the Berne Convention for the Protection of Literary and Artistic works and the Trade-Related aspects of Intellectual Property Rights (TRIPS). Also, South Africa has signed the WIPO Copyright Treaty but not ratified it yet.

South Africa appears to have a high standing in the field of protection of intellectual property rights in general and copyright in particular. The 2008 International Property Rights Index (IPRI) is an international comparative indicator that measures the significance of both physical and intellectual property rights and their protection for economic well-being. The Property Rights Alliance[21] initiated the IPRI studies for the Hernando de Soto Fellowship Program to contribute to developing accurate and comprehensive measures regarding Property Rights (PR) on an international scale. The IPRI provides a tool for comparative analysis and research on global property rights. The Index focuses on three areas: Legal and Political Environment (LP), Physical Property Rights (PPR) and Intellectual Property Rights (IPR).

The IPR component considers four aspects of intellectual property:

- Protection of IPR according to opinions of expert participants in each country.
- Patent protection as is manifested in coverage, membership in international treaties, restrictions on patent rights, enforcement and duration of protection.
- Trademark protection covering the registration, maintenance and enforcement of trademark rights.
- Copyright piracy covering piracy levels mainly in business software, records and music, motion pictures and entertainment software.

The Property Rights Alliance (PRA) study analyses data for 115 countries around the globe, representing 96% of world GDP. Of great importance, the 2008 gauge incorporates data of property rights protection from various sources, often directly obtained from expert surveys within the evaluated countries.

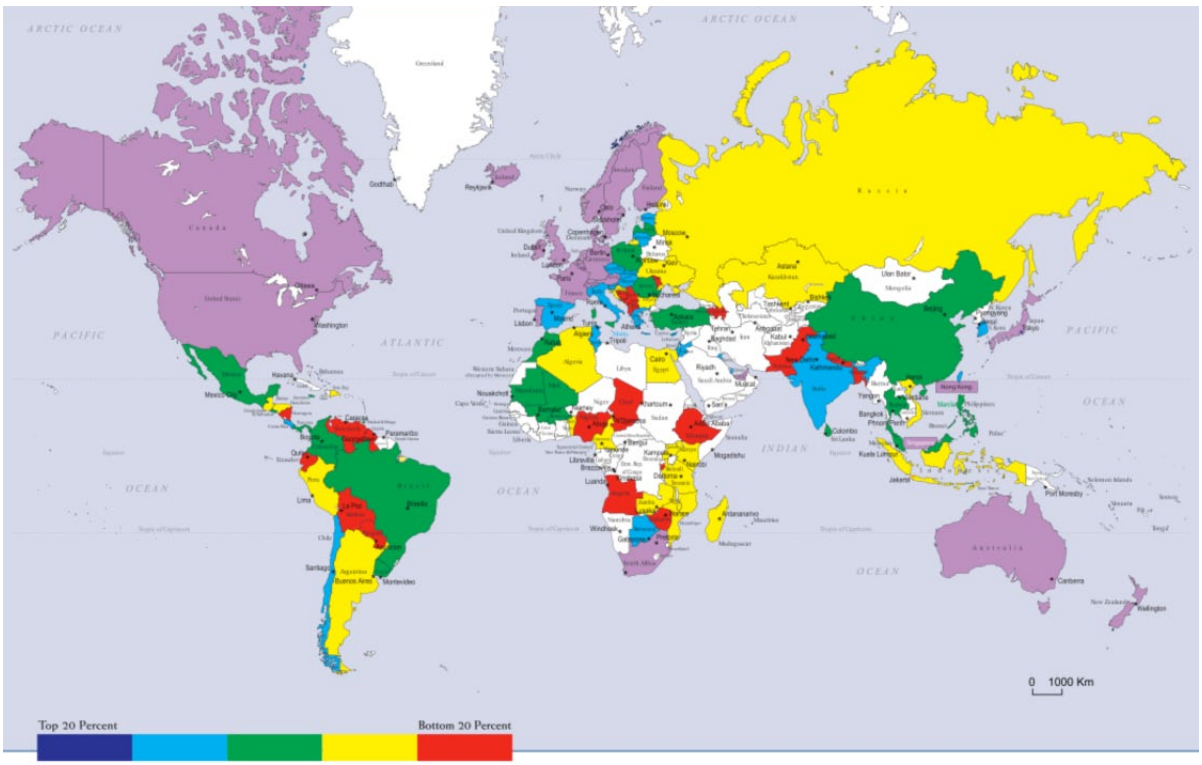
Figure 1 shows a map of the world where countries with similar property rights indices are coloured similarly. South Africa belongs to the same group as North America, Europe and Australia.

In the IPR, South Africa scores 7 and is in the 12th position (in terms of marks). In terms of countries South Africa is ranked 22nd out of 115 countries. The top country in the index is Finland with a score of 8.5. Countries like South Korea (6.7), Italy (6.5), Israel (6.3), India (5.2), Brazil (5.1) and others are below South Africa.

South Africa's IPR score is substantially higher from what is expected from its GDP per capita (an indicator discussed in the Property Rights Alliance (2008) report). South Africa's score was expected to be around 5.

[19] Ibid.
[20] Kenneth Crew, study commissioned by WIPO (2008) "*Study on Copyright Limitations and Exceptions for Libraries and Archives*". Standing Committee on Copyright and Related Rights, Seventeenth Session, Geneva, November 3rd – 7th, 2008.
[21] Property Rights Alliance (2008) "*International Property Rights Index 2008 Report*", Washington DC.

Figure 1: International Property Rights Index: Ranking by Quintiles 2008



Source: Property Rights Alliance 2008

Zooming into the piracy rates internationally (appendix 1, table 12) leads us to the same conclusion. South Africa has one of the lowest piracy rates. The Business Software Alliance states: "South Africa is among the countries with the lowest piracy rates (35%) in Africa and the Middle East."[22]

South Africa has identified the need to protect, support and promote the copyright-based industries since 1998. The then Department of Arts, Culture, Science and Technology (DACST) published a strategic plan for "Cultural Industries"[23] as the department's contribution towards the government's Growth, Employment and Redistribution (GEAR) strategy.

The "Cultural Industries" identified by the DACST included the music industry, the craft industry, the publishing industry and the film and television industry (the most essential core copyright-based industries). "Their selection was based on a number of criteria including the recognition that these sectors were identifiable industries in South Africa, are potentially internationally competitive and have the potential to create employment and offer opportunities for rural and urban job creation."[24]

[22] Business Software Alliance: News Release May 12th 2009 Illegal Software use is up 1% in South Africa, accessed during March 2010 at http://global.bsa.org/globalpiracy2008/pr/pr_southafrica.pdf

[23] DACST (1998) "*Creative South Africa: A Strategy for Realising the Potential of the Cultural Industries*", Department of Arts, Culture, Science and Technology, Pretoria.

[24] Ibid.

Having investigated the importance of the "Cultural Industries", the report makes some key recommendations for the future of these industries:

- designing and implementing a Cultural Industries Development Programme (CIDP),
- setting up a CIDP regulatory framework,
- creating a Cultural Industries Development Fund,
- promoting the industries internationally and setting up an export programme,
- co-ordinating copyright legislation to protect the local cultural products,
- developing human resources and skills appropriate to cultural industries,
- adopting and co-ordinating government supply side measures,
- designing and implementing an awareness campaign focused on audience development,
- collecting and monitoring statistics,
- co-ordinating initiatives in other departments,
- establishing a Cultural Industries Development Agency.

The DACST report looked at the cultural industries not only holistically as an important sector of South Africa but also per individual industry. The following reports focused on the main cultural industries: film and television, publishing and the music industry.

2.1 The South African Film and Television Industry Report[25]

The South African film and television industry report is part of the Cultural Industries Growth Strategy (CIGS) conducted by the DACST, whose purpose was to develop a strategy of the film, craft and publishing industries.

The report summarises the significance of the film and television industry in three main pillars:

- It is a medium of communication of ideas, information and ideology.
- It provides opportunity for debate and discussion for participation in the social and political life.
- Globally, the particular industry creates millions of jobs and contributes significantly to the total economy.

Past mismanagement of funding and lack of equity have been two of the main reasons that the South African film and television industry struggles to overcome other important predicaments to the growth of the industry which have been identified by the report as follows:

- Limited access to financing and facilities,
- Insufficient audience development,
- Few training opportunities, only domestic interest for the industry with limited opportunities for exports and
- A lack of understanding of the needs of the market by South African film makers.

These predicaments remained for the next years as confirmed by the Industrial Policy Action Plan (IPAP)[26]. This report confirmed that some key constraints to the sector's growth are:

- Limited access to finance,
- Limited access to distribution and exhibition,
- Lack of training opportunities,
- Lack of opportunities to export the sector's products and
- Insufficient coordination.

[25]DACST (1998) "*The South African Film and Television Industry Report*" in "*Cultural Industries Growth Strategy (CIGS)*", Department of Arts, Culture, Science and Technology, Pretoria.
[26]DTI (2007) "*Industrial Policy Action Plan*", Department of Trade and Industry, Pretoria.

During the late 1990s, important developments promised a better future for the film and television industry in South Africa:

- Formal acknowledgement of the significance of the industry by the South African government and implementation of initiatives and developments such as establishing the National Film and Video Foundatirealignment of ownership structures. It began with Primedia's acquisition of the Ster-Kinekor distribution and exhibition business in July 1997 and the subsequent establishment of an entertainment division.
- Recommendations by the White Paper on Broadcasting with regards to changes in the broadcast industry, such as commercialisation of various SABC operations and introduction of satellite and digital technology,
- Establishment of the International Southern African Film and Television Market to provide opportunities for networking and deal-making between key players of the industry.

2.2 The South African Publishing Industry Report[27]

The South African publishing industry report was also part of the biggest initiative by the DACST under the Cultural Industries Growth Strategy (CIGS) in 1998. Main areas of the South African society are linked and signify the importance of the publishing industry:

- Education and training,
- Awareness of, and participation in current affairs,
- Cultural expression and entertainment,
- Research and innovation,
- Critique and commentary and
- Communications.

The publishing industry also acts as the central core of an entire network of related individuals and industries, such as paper manufacturers, educational institutions, ink producers, authors, printers, designers, bookbinders, illustrators, booksellers, distributors and CD manufacturers. The industry is therefore an important source of revenue and employment in South Africa.

However, various problems have limited the growth of the industry as follows:

- A limited buying market for published material, government prioritises basic needs before publishing products,
- Lack of training opportunities, advances in information technology affecting the more traditional forms of publishing, highly competitive foreign publishers impacting on local industry and
- Inadequate motivation for local writers.

2.3 The South African Music Industry[28]

This report, also part of the Cultural Industries Growth Strategy (CIGS) in 1998, focuses on the music industry of South Africa which is a complicated combination of different industries producing a range of musical products. The industry, according to the report, includes:

- Creators: musicians and composers,
- Agents,
- Record companies and
- Retail outlets.

The music industry is responsible for the creation of jobs and income in the South African economy. A SWOT analysis was conducted for the music industry summarised as follows.

[27] DACST (1998) "*The South African Publishing Industry Report*" in "*Cultural Industries Growth Strategy (CIGS)*", Department of Arts, Culture, Science and Technology, Pretoria.
[28] DACST (1998) "*The South African Music Industry Report*" in "*Cultural Industries Growth Strategy (CIGS)*", Department of Arts, Culture, Science and Technology, Pretoria.

Strengths

- Multinational recording companies involved in the domestic market
- Widespread retail and broadcast network and agencies
- Growth in community radio broadcasting
- Cooperation both between local musicians and between local and international musicians
- Growth in the recording, marketing and sales of domestic collection

Weaknesses

- Limited financing
- Limited investment and promotion of local artists
- High piracy levels in the music industry
- Lack of coordinated strategy

Opportunities

- Growth of international music industry
- Exposure of the local music industry

Threats

- Lack of necessary commitment
- Lack of resources from several key players

Recently, more publications were released with information on creative industries as well as specific sectors:

- The *Industrial Policy Action Plan*, by the Department of Trade and Industry (Available at http://www.dti.gov.za/DownloadFileAction?id=561)
- The *Annual Book Publishing Industry Survey Report 2008* by the Department of Arts and Culture through the South African Book Development Council (SABDC) and the Publishers' Association of South Africa (PASA). Available at: http://www.publishsa.co.za/downloads/industry-statistics/2008_industry_survey.pdf.

3. International Studies: Estimating the Economic Contribution of Copyright-Based Industries

A literature review was carried out identifying the results and the methodologies employed by other studies internationally. Compatibility with other investigations will provide the basis for comparisons and the development of relevant recommendations for the South African copyright-based industries.

The WIPO "Guide on Surveying the Economic Contribution of the Copyright-Based Industries"[29] states that the economic contribution of the copyright-based industries has exceeded expectations in the last two decades.

In order to facilitate the undertaking of a comparative analysis, WIPO developed a "Guide on Surveying the Economic Contribution of the Copyright-Based industries". The guide provides a methodology and indicators to be employed. The existing WIPO studies in other countries follow the guide in its recommendation of the main indicators to be analysed: the sectors' value-added as a % of GDP, the sectors' employment as % of total employment in the country and to a limited extent the trade performance of the sectors.

A summary of a selection of studies[30, 31] dealing with the significance of the copyright industries in a number of countries is presented in figure 2. The figure shows that the total economic contribution of copyright-based industries as a % to GDP varies from 2.81% in Bulgaria to 11.70% in the Philippines (figure 2). The average unweighted share of the copyright-based industries to GDP in these nine countries is 6.35%.

Similarly the indicator ratio of persons employed in the copyright-based sector to the total number of employees in the economy varies from 3.03% in Jamaica to 11.17% in Latvia. Latvia's copyright-based industries are responsible for the employment of 11.17% of the total employment of the country, this is much higher than the average of the nine countries (7.21%).

Similar findings are identified by other studies. According to Siwek (2004)[32], the US copyright-based industries accounted for 7.75% to the US GDP and 5.9% of the total workforce, in 2001.

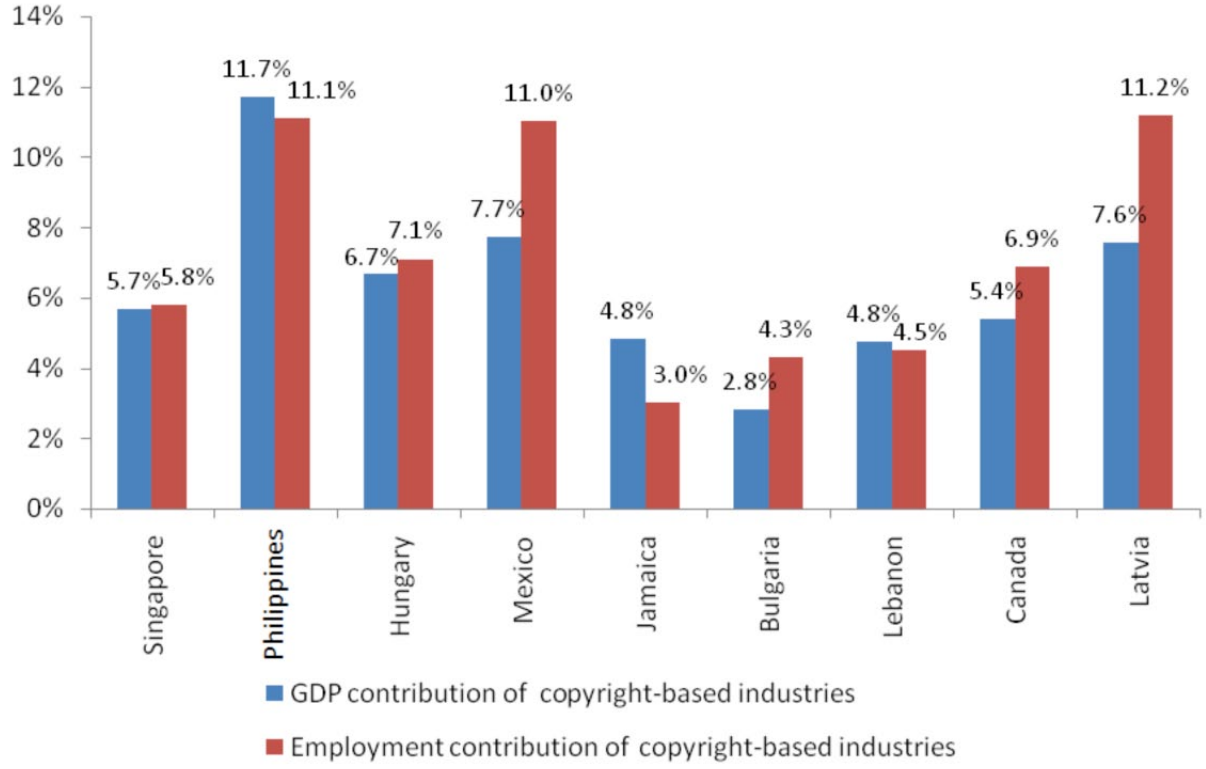
[29] World Intellectual Property Organization (WIPO), 2003 "*Guide on surveying the economic contribution of the copyright-based industries*". WIPO: Geneva.

[30] World Intellectual Property Organization (WIPO), 2006 "*National Studies on Assessing the Economic Contribution of the Copyright-Based Industries No1: the economic contribution of copyright-based industries.*" WIPO: Switzerland. Countries: Latvia (2000), Singapore (2004), Canada (2004), Hungary (2005).

[31] World Intellectual Property Organization (WIPO), 2008 "*National Studies on Assessing the Economic Contribution of the Copyright-Based Industries No2: the economic contribution of copyright-based industries*". WIPO: Switzerland. Countries: Philippines, Mexico (2006), Jamaica (2007), Bulgaria (2007), Lebanon (2007).

[32] Siwek, S.E., 2004 "*The measurement of "copyright" industries: the US experience*". Review of Economic Research on Copyright Issues, 1(1) pp. 17-25.

Figure 2: International Contribution of Copyright-Based Industries (GDP and Employment) WIPO Supported Studies

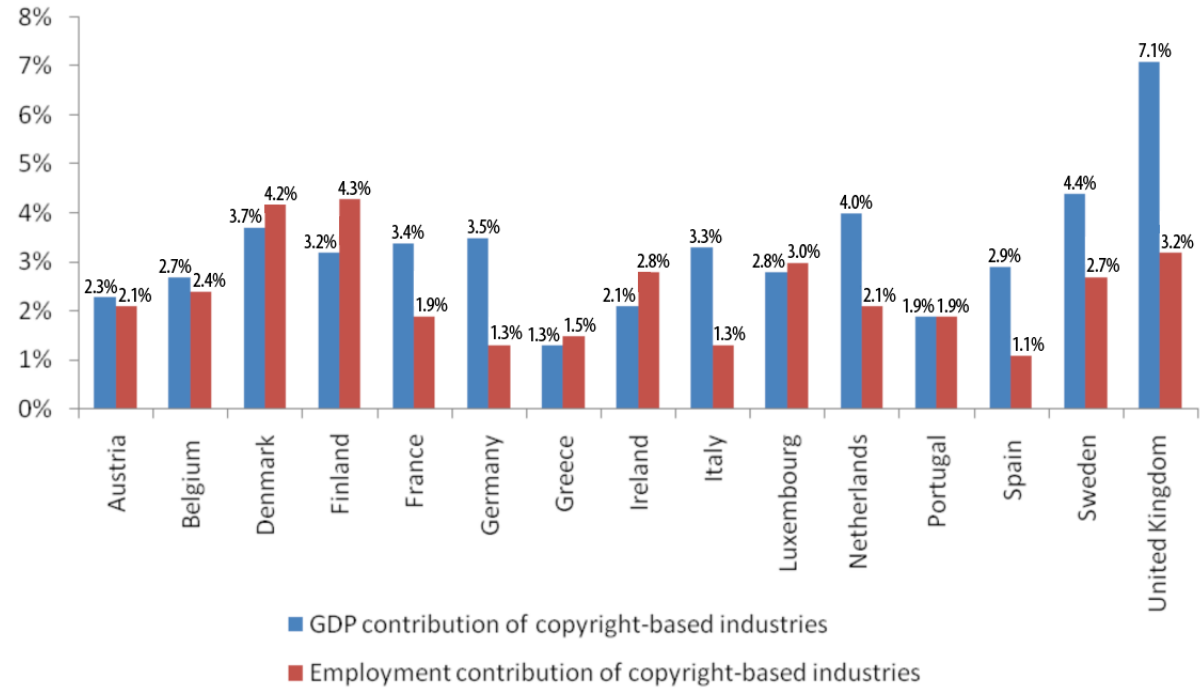


Source: Data derived from World Intellectual Property Organization (WIPO) (2006 and 2008)[33, 34]

A study conducted by the Media Group[35] for the European countries showed that the copyright-based industries have an important contributing role in the GDP and employment of Europe as well (figure 3).

[33] See footnote 25.
[34] See footnote 26.
[35] Media Group, 2003 "*The Contribution of Copyright and Related Rights to the European Economy*". Business Research and Development Centre Turku School of Economics and Business Administration. Finland.

Figure 3: Contribution of Copyright-Based Industries in European Countries



Source: Data derived from Media Group (2003)[36]

The contribution of the copyright-based industries to the countries' GDP was in the range of 1.5% to 7% while the copyright-based industries employ 2% to 4.3% of the total workforce.

Based on the guidance of WIPO's *Guide*, the studies mentioned in figure 2 classified the total copyright industry into four categories: core, interdependent, partial and non-dedicated support copyright industries.

It is shown in table 13 (appendix 2) that the core copyright-based industries made a significant contribution to the total economy. In terms of their share in total GDP, the core copyright-based industries' contribution varies from 1.57% in Bulgaria to 8.59% in the Philippines, these are the countries with the highest and lowest share of total copyright-based industries' contribution. With regards to employment, the average contribution of the core copyright-based industries in the countries in question is 3.74%, half of the contribution of the total copyright-based industries (7.21%).

Two sub-sectors play a significant role in the overall economic contribution of the core copyright-based industries to GDP, namely 'press and literature' and 'software and databases'. From the employment's point of view, however, 'press and literature' and 'radio and television' provide to a high percentage of copyright-based industries' employees.

Compared to the core copyright-based Industries, the interdependent copyright-based industries contribute less to the total economic activity and total employment. The average of the summarised studies' share to GDP is 1.42%, while their average contribution to the total employment is 1.26% (table 14, appendix 2). More than half of the interdependent copyright-based industries' contribution is derived from two main sub-sectors: 'TV sets, radios, VCRs and DVD players' and 'computers and equipment'.

The majority of the studies summarised concludes that the partial copyright-based industries do not contribute more than 1% of the total economic activities and employment. The exceptions are the Mexican and the Latvian partial copyright-based industries which contribute 1.11% and 2.81% of the total GDP, respectively and 2.53% and 5.29% of the total employment respectively (table 15, appendix 2).

[36] Ibid.

Five out of eight studies' results showed that the non-dedicated support industries do not contribute more than 1% to the total economy, while the rest (Hungary, Mexico and Jamaica) present a contribution not higher than 2%. Regarding employment, the contribution of the non-dedicated support industries varies from 0.28% in Bulgaria to 1.48% in Latvia (table 16, appendix 2).

In conclusion, a number of international studies identify the high significance of the copyright-based industries to the countries' total economic activities, as represented by the value-added of these industries and their employment levels. More particularly, the core copyright-based industries are the most important category based on their level of contribution. 'Press and literature', 'software and databases', 'radio and television' and 'computers and equipment' as well as an interdependent copyright-based industry named, 'TV sets, radios, VCRs and DVD players' are notable sources of economic activity and job positions.

4. Methodology

In this report we follow the WIPO methodology for the estimation of the contribution of the copyright industries in the South African economy. According to WIPO, copyright-based industries are those engaged in creation, production and manufacturing, performance, broadcast, communication and exhibition or distribution and sales of works and other protected subject matter[37]. The WIPO Guide also recognises that the economic impact can be related to both "core" copyright-based industries and "non-core" industries. These different categories proposed are dependent on copyright at different levels, represented in the WIPO Guide by the *copyright factors*.

In our study, we deal with "core" and "non-core" industries separately by measuring their value-added contribution as well as employment and trade levels. In this section, the overall methodology, data collection issues and selection of copyright factors are described in depth.

The WIPO Guide categorises the copyright-based industries into four main categories based on their type of association to copyright. They are:

- **core copyright industries:** industries wholly engaged in creation, production and manufacturing of performance, broadcast, communication and exhibition or distribution and sales of works and other protected subject matter
- **interdependent copyright industries:** industries engaged in production, manufacture and sale of equipment whose function is wholly or primarily to facilitate the creation, production or use of works and other protected subject matter
- **partial copyright industries:** industries in which a portion of the activities is related to works and other protected subject matter and may involve creation, production and manufacturing, performance, broadcast, communication and exhibition or distribution and sales
- **non-dedicated support industries:** industries in which a portion of the activities is related to facilitating, broadcast, communication, distribution or sales of works or other protected subject matter and whose activities have not been included in the core copyright industries.

The specific South African industries for each of the above categories were determined based on the WIPO Guide and the availability of data in the country, as presented in table 1. In appendix 3 (tables 18-21), we indicate the sub-categories in which each of the main industries is comprised, in accordance with the classification by the WIPO Guide.

Table 1: Copyright-Based Industries Used in the South African Study

Core	Interdependent	Partial	Non-dedicated
Printing, publishing and recorded media	Television, radio and communication equipment	Apparel, textiles and footwear	General wholesale and retailing
Film and television industry	Computers and equipment, photocopiers	Furniture, jewellery, musical instruments, games and toys	Transport, storage and communication
Photography, software and databases, advertising	Paper and paper products	Crafts	
Copyright collecting societies		Glass and glass products	

Industrial sectors such as 'photography, software and databases, advertising', 'computers and equipment, photocopiers', and 'furniture, jewellery, musical instruments, games and toys' were derived from the following sectors: 'business services', 'machinery and equipment' and 'furniture and other manufacturing'. In these cases, we used a percentage that represents the appropriate copyright industries. For instance, 'business and services' includes two significant sub-sectors ('advertising' and 'software and databases') among other smaller copyright-based industries, such as 'photographic activities'. Our analysis of the outputs of these

[37] World Intellectual Property Organization (WIPO), 2003 "*Guide on surveying the economic contribution of the copyright-based industries*". WIPO: Geneva.

two industries indicates that they contribute almost 8.7% of the 'business services' sector's output for 2008 [advertising R3 billion, software R38 billion]. Hence, 10% of the 'business services' sector statistics was estimated to represent all the copyright-based industries included in it.

The basic sources where data were obtained from are the following:

- Business Monitor International Ltd,
- the Department of Arts, Culture, Science and Technology,
- the Department of Labour,
- the Economist Intelligence Unit,
- the National Organisation for Reproduction Rights in Music in Southern Africa (NORM),
- the Publishers Association,
- Quantec databases,
- SA Recording Rights Association Ltd (SARRAL),
- the South African Book Development Council (SABDC),
- the South African Reserve Bank,
- the South African Revenue Service (SARS),
- the Southern African Music Rights Organisation (SAMRO) and
- Statistics South Africa.

A number of international studies use the so-called *copyright factor*, which is a percentage ratio expressing the share of copyright activities in a given industry. It is used as a weight which –according to the industry in question – takes values between 0 and 1: 1 for industries that only produce products and works related to copyright while 0 for the industries that have nothing to do with copyright.

By multiplying the indicators chosen (e.g. value-added) by the copyright factor of the industry, researchers estimate the contribution of the copyright content. Estimating the copyright factors is challenging and different investigations employ different methodologies for their estimation. For instance, the study on the contribution of copyright-based industries in Mexico used the average of the US and Hungarian copyright factors while the study on Singapore produced the copyright weights by using the US copyright factors. A summary of copyright factors used in various studies is given as an indication in table 17, appendix 2.

In our study, we have employed the copyright factors used in the study for Singapore[38] (see table 2). Singapore was selected because it is a newly industrialised economy with high dependence on trade, tourism and other related copyright-based industries. In addition, South Africa and Singapore are close in terms of their copyright legislation, piracy rates (see appendix 1, table 12) and in the index of intellectual property rights.

Table 2: South African Copyright Factors

Core Copyright-Based Industries		
	Printing, publishing and recorded media	1.000
	Film and television industry	1.000
	Photography, software and databases, advertising	1.000
	Copyright collecting societies	1.000
Interdependent Copyright-Based Industries		
	Television, radio and communication equipment	0.350
	Computers and equipment, photocopiers	0.350
	Paper and paper products	0.250
	Photographic and cinematographic instruments	0.300

[38]World Intellectual Property Organization (WIPO), 2006 "*National Studies on Assessing the Economic Contribution of the Copyright-Based Industries No. 1: the economic contribution of copyright-based industries in Singapore 2004*". WIPO: Switzerland.

Table 2: South African Copyright Factors (Continued)

Partial Copyright-Based Industries		
	Apparel, textiles and footwear	0.004
	Furniture, jewellery, musical instruments, games and toys	0.100
	Crafts	0.420
	Glass and glass products	0.006
Non-Dedicated Copyright-Based Industries		
	General wholesale and retailing	0.057
	Transport, storage and communication	0.057

Source: World Intellectual Property Organization (WIPO)[39]

[39] Ibid.

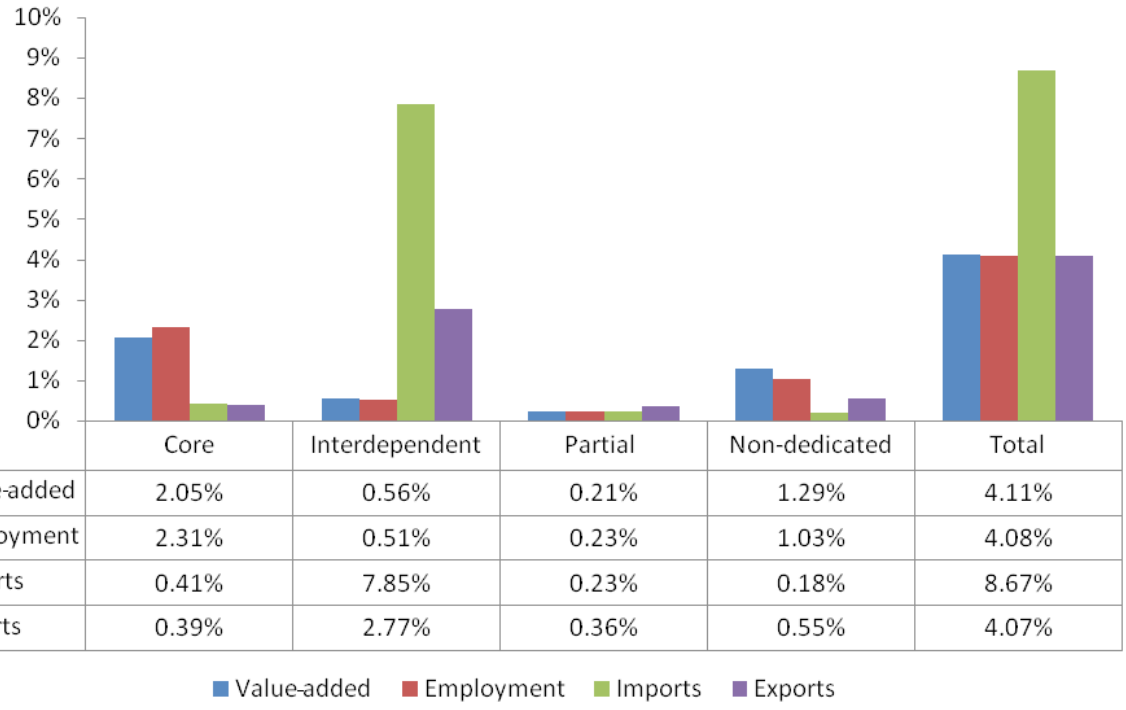
5. The Contribution of Copyright-Based Industries to the South African Economy

This chapter presents the results of the quantitative analysis conducted aiming to estimate the total contribution of the copyright-based industries, as well as the contribution of the individual categories of copyright-based industries (i.e. core, interdependent, partial, non-dedicated support industries). The analysis focuses on the estimation of value-added, employment, exports and imports.

5.1 The Performance of Copyright-Based Industries

The overall contribution of the copyright-based industries in 2008 is presented in figure 4. The copyright-based industries are responsible for almost 4.11% of the total economy in terms of value-added, with core copyright-based industries being the highest contributor (2.05%) and the non-dedicated copyright industries following with 1.29%.

Figure 4: Contribution of Copyright-Based Industries in 2008



	Core	Interdependent	Partial	Non-dedicated	Total
Value-added	2.05%	0.56%	0.21%	1.29%	4.11%
Employment	2.31%	0.51%	0.23%	1.03%	4.08%
Imports	0.41%	7.85%	0.23%	0.18%	8.67%
Exports	0.39%	2.77%	0.36%	0.55%	4.07%

Source: Authors' calculations with data from the Department of Labour (DoL), the Department of Arts and Culture (DAC), Quantec databases, the South African Reserve Bank (SARB) and the South African Revenue Service (SARS).

As far as employment is concerned, 4.08% of the workforce is employed in the copyright-based industries, the majority of which is employed in the core and non-dedicated copyright-based industries (2.31% and 1.03%, respectively). The interdependent copyright-based industries show a high contribution to the exports of the economy (2.77%) and an even higher contribution to the total imports (7.85%).

Table 3 presents the values of all the copyright based sectors examined in this study for four indicators: real value-added, employment, exports and imports, after the implementation of copyright factors in the calculations.

Table 3: Real Value-Added, Employment, Exports and Imports for all Copyright-Based Industries for 2008

Year 2008	Real value-added	Employment	Exports	Imports
	R millions (2005=100)	Number of employees	R millions (2005=100)	R millions (2005=100)
TOTAL ECONOMY	**1,620,139**	**10,376,881**	**495,382**	**572,354**
Total CBI	**66,101**	**422,974**	**20,168**	**48,051**
Core Copyright–Based Industries	32,670	239,959	1,954	2,359
Printing, publishing and recorded media	7,588	53,465	790	2,009
Film and television Industry	6,811	30,899	–	–
Photography, software and databases, advertising	18,271	155,595	1,165	350
Interdependent Copyright–Based Industries	9,091	52,620	13,745	43,324
Photographic and cinematographic instruments	15	–	–	–
Television, radio and communication equipment	944	2,632	994	9,557
Computers and equipment, photocopiers	5,442	40342	11,138	33,767
Paper and paper products	2705.55	9646	1,612	1,595
Partial Copyright–Based Industries	3,426	23,879	1,767	1,321
Apparel, textiles and footwear	45	472	8	72
Furniture and other manufacturing	2,418	9,405	1,755	1,237
Crafts	949	13,938	–	–
Glass and glass products	14	63	3	11
Non–Dedicated Copyright–Based Industries	20,913	106,516	2,702	1,046
General wholesale and retailing	11,685	85,796	1,049	5
Transport, storage and communication	9,229	20,720	1,654	1,041

Source: Authors' calculations with data from the Department of Labour (DoL), the Department of Arts and Culture (DAC), Quantec databases, the South African Reserve Bank (SARB) and the South African Revenue Service (SARS).

In table 4, we analyse the growth of contribution of the four main categories of copyright-based industries to total value-added, employment, imports and exports. The figures are calculated as the percentage change between the first and last year for each period. For example, after the use of the copyright factors, the value-added of the total copyright-based industries in 2000 was ZAR49,970.74 million while in 2008, it was R66,615.58 million: a change of 33%.

Table 4 shows that all the different divisions of copyright-based industries have increased substantially through the last four decades, with the overall contribution of copyright-based industries to the total of value-added having grown by 33% in the last decade. Only the partial copyright-based industries showed a negative growth of their value-added in the 1990s. This trend in combination with the sharp increase of imports (165%) and slower increase of exports (18%) in the same period can be interpreted as a result of the lack of comparative advantage of the South African partial copyright-based industries, in comparison with the rest of the world. As a result of this decrease, the employment growth of the next period (2000 to 2008) was affected.

Table 4a: Value-Added, Employment, Imports and Exports Growth of Copyright-Based Industries in % 1970 to 2008

	Value-added				
	Core	Interdependent	Partial	Non-dedicated	Total
1970-1979	28%	63%	36%	44%	37%
1980-1989	3%	20%	94%	18%	8%
1990-1999	17%	15%	-6%	31%	16%
2000-2008	24%	40%	24%	45%	33%
	Employment				
	Core	Interdependent	Partial	Non-dedicated	Total
1970-1979	33%	23%	29%	21%	33%
1980-1989	36%	16%	30%	10%	23%
1990-1999	51%	-5%	12%	4%	26%
2000-2008	30%	-6%	-13%	17%	21%
	Imports				
	Core	Interdependent	Partial	Non-dedicated	Total
1970-1979	9%	-28%	-31%	-20%	-7%
1980-1989	-17%	5%	-9%	49%	-5%
1990-1999	21%	231%	175%	27%	104%
2000-2008	-29%	72%	160%	8%	46%
	Exports				
	Core	Interdependent	Partial	Non-dedicated	Total
1970-1979	-55%	10%	93%	1%	15%
1980-1989	-14%	130%	101%	40%	84%
1990-1999	202%	97%	18%	100%	82%
2000-2008	108%	4%	23%	50%	31%

Source: Authors' calculations with data from the Department of Labour (DoL), the Department of Arts and Culture (DAC), Quantec databases, the South African Reserve Bank (SARB) and the South African Revenue Service (SARS).

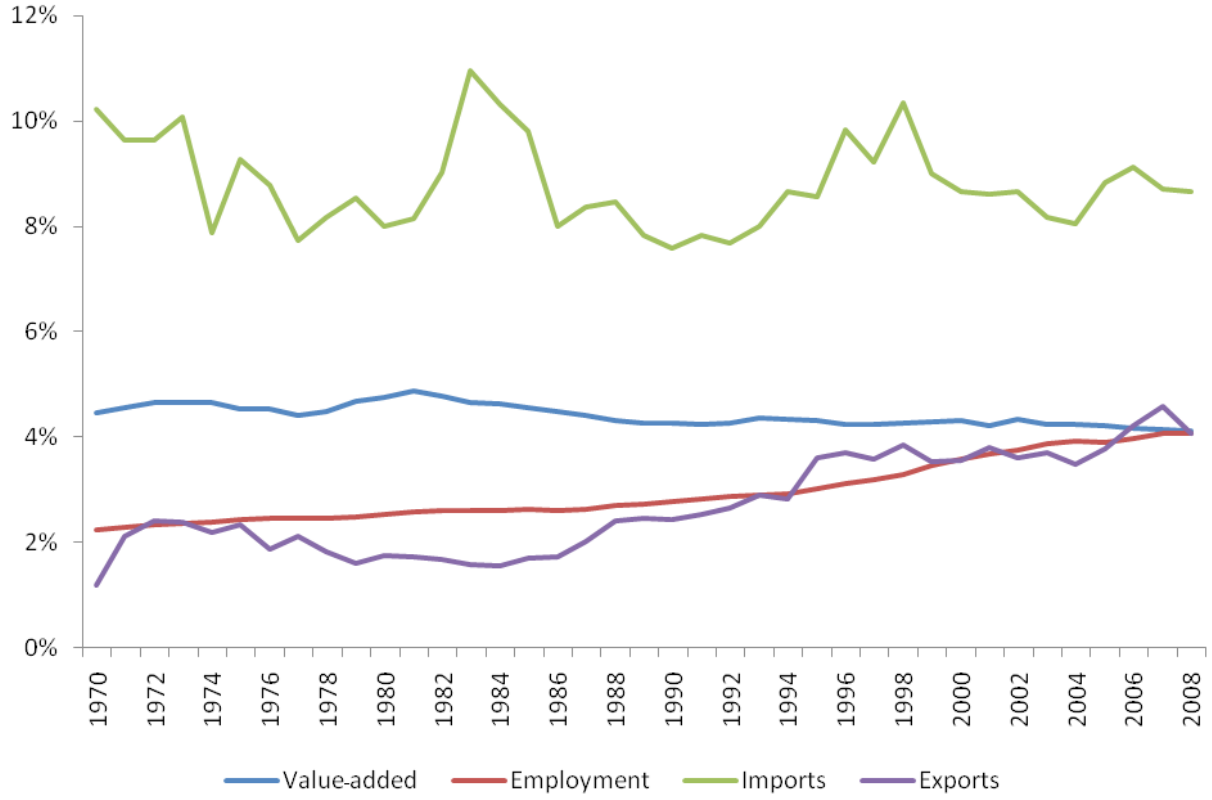
Also, the growth of employment in copyright-based industries is presented. It is noticed that the employment in interdependent copyright-based industries has decreased in the last two decades and employment of partial copyright-based industries has decreased in the period 2000 to 2008. The number of employees in copyright-based industries has increased by 21% during the period 2000 to 2008. Although, the value-added of the interdependent industries kept increasing through the years, their employment decreased during the period 1990 to 2008. It can be speculated that this decreasing trend can be attributed to the fact that the production might have become more capital intensive – hence, less labour intensive.[40] This can be linked to the opening of the country to the international markets as well as the phenomenon of globalisation and transfer of knowledge. The rest of the industries were not affected because they are less technology-driven industries. In addition, this trend can be supported by the fact that the same period also witnessed a significant drop in the growth of imports of the interdependent industries.

The trade of copyright-based industries has followed the overall trend of the South African trade, showing high increases in the 1990s after the end of sanctions. The core copyright-based industries' imports showed a significant decrease (-29%) while their exports showed a high increase between 2000 and 2008 (108%); an indication that this type of industries either had the comparative advantage and benefited from the end of sanctions or/and the South African consumers had little interest for international products of the core

[40]The joint labour intensity of 'television, radio and communication', 'computers and equipment/ photocopiers' and 'paper and paper products' (the main interdependent copyright-based industries) decreased by 20% from 2000 to 2008 while its capital intensity increased by 1% (Quantec Standardised Industry Database (www.quantec.co.za/data/easydata-rsa-standardised-industry)).

copyright-industries. The total copyright-based industries' imports and exports rose in the last 8 years of the sample by 46% and 31% respectively.

Figure 5: Evolution of Contribution of Copyright-Based Industries to Total Value-Added, Employment, Imports and Exports



Source: Authors' calculations with data from the Department of Labour, the Department of Arts and Culture (DAC), Quantec databases, the South African Reserve Bank (SARB) and the South African Revenue Service (SARS).

Figure 5 shows the evolution of the contribution of the total copyright-based industries to value-added, employment, imports and exports for the period 1970 to 2008, while table 4 presents the exact figures. Even though the growth of value-added of the specific industries was high, their contribution to total value-added presented an increase until the beginning of the 1980s. From that point onwards, the trend varied little in the range from 4% to 4.5%.

The percentage of workforce employed in copyright-based industries to the total has almost doubled in the period 1970 to 2008 (less than 2.3% in 1970 and almost 4.1% in 2008), as shown in figure 5. The copyright-based industries were responsible for between 8% and 10% of the country's imports, range that remained relatively constant with a significant spike in the middle of the 1980s. On the other side, the sector's exports showed a noteworthy rise at the end of the 1980s.

Table 4b: Copyright-Based Industries to Value-Added, Employment, Imports and Exports: 1970 to 2008

	Value-added	Employment	Imports	Exports
Units	Rand million (2005=100)	Number of employees	Rand million (2005=100)	Rand millions (2005=100)
1970	26,017	158,957	16,370	1,886
1971	27,621	166,305	16,978	3,528
1972	28,848	173,118	14,843	4,233
1973	30,098	180,671	17,260	3,969
1974	31,583	189,801	16,087	3,527
1975	31,608	198,524	18,308	3,760
1976	32,593	204,593	15,592	3,173
1977	31,678	205,084	11,870	3,785
1978	33,016	206,606	12,561	3,398
1979	35,543	212,198	12,976	3,047
1980	38,241	224,266	14,477	3,380
1981	41,417	235,598	16,777	3,240
1982	40,403	240,443	15,378	3,043
1983	39,616	240,172	15,634	2,837
1984	41,629	243,993	17,665	2,864
1985	40,865	246,132	14,433	3,470
1986	40,194	247,512	11,463	3,422
1987	40,185	253,199	12,424	4,146
1988	40,695	262,870	15,339	5,350
1989	41,299	270,180	14,213	5,541
1990	41,075	274,187	12,971	5,475
1991	40,599	276,915	13,673	5,590
1992	40,319	279,997	14,119	6,233
1993	41,585	279,880	15,759	7,489
1994	42,612	283,109	19,790	7,461
1995	43,671	293,405	22,855	10,562
1996	44,422	307,175	28,515	11,533
1997	45,619	315,569	28,223	11,700
1998	46,305	321,466	32,242	13,038
1999	47,648	336,375	25,700	12,050
2000	49,971	347,906	26,060	13,093
2001	50,283	357,886	26,027	14,266
2002	53,427	371,428	27,514	13,705
2003	54,058	383,586	27,977	14,119
2004	56,430	389,654	31,762	13,708
2005	58,840	389,480	38,645	16,080
2006	61,688	404,635	47,281	19,346
2007	64,693	420,615	49,203	22,209
2008	66,616	422,974	49,646	20,168

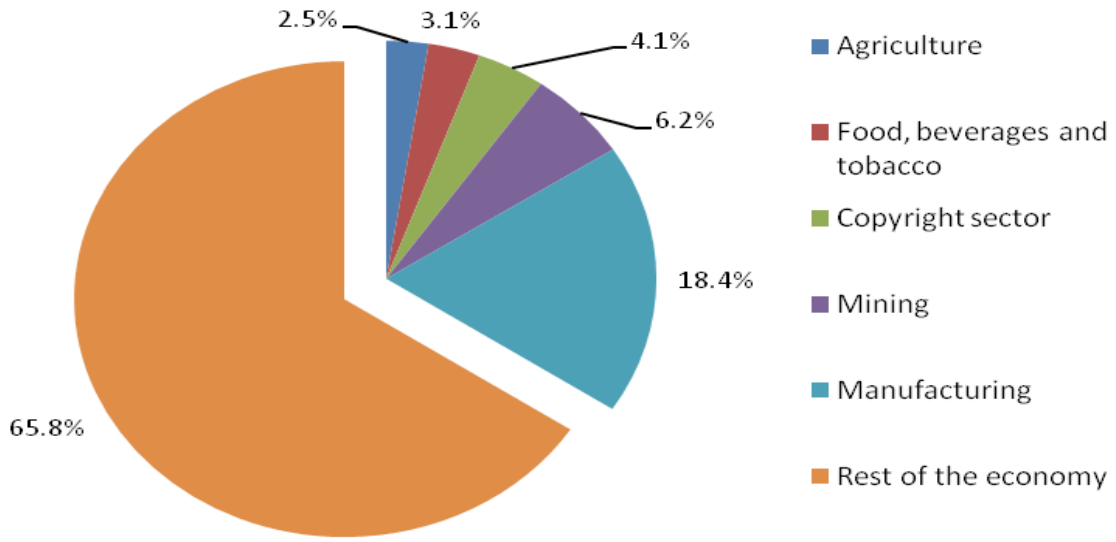
Source: Authors' calculations with data from the Department of Labour, the Department of Arts and Culture (DAC), Quantec databases, the South African Reserve Bank (SARB) and the South African Revenue Service (SARS).

5.2 Comparison with Other Economic Sectors

To put in context the findings of the analysis on the contribution of the copyright-based industries, we compare their contribution to the total economy with that of other major sectors of the South African economy.

With regards to value-added, figure 6 shows that the copyright sector has contributed more (4.11%) to the total economy in 2008 than 'agriculture' (2.51%) and 'food, beverages and tobacco' (3.09%). South Africa's economy, however, is based mainly on its 'manufacturing' and 'mining' sectors. Hence, as expected, the copyright sector contributed significantly less than the 'manufacturing' (18.36%) and 'mining' (6.15%) sectors.

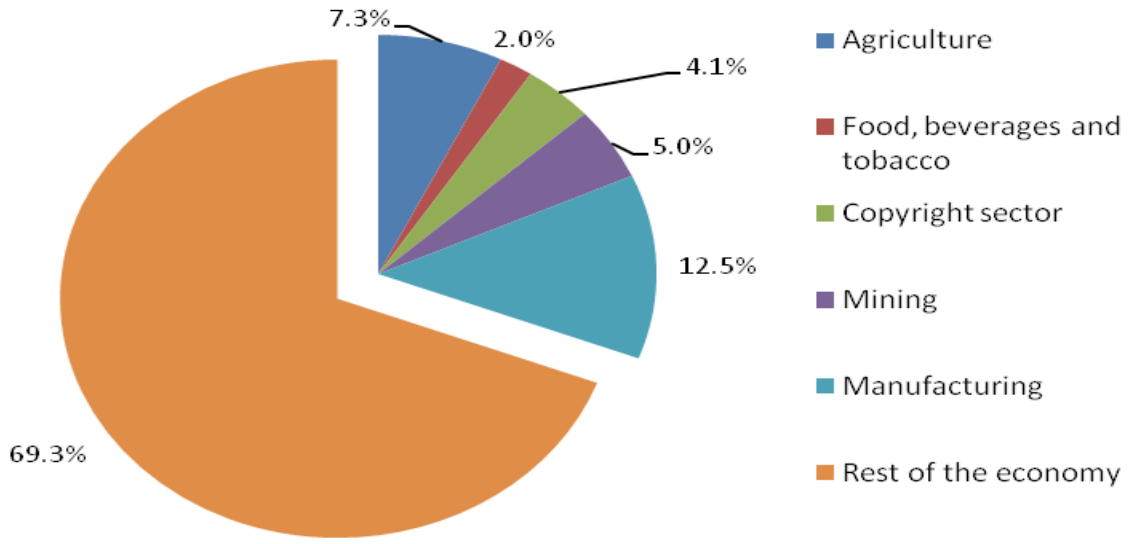
Figure 6: Value-Added Contribution: Comparison with Other Sectors – 2008



Source: Authors' calculations with data from the Department of Arts and Culture (DAC), Quantec databases and the South African Reserve Bank (SARB).

In contrast, as shown in figure 7, the number of employees in the copyright sector (4.08%) in comparison with the total economy is lower than in the mining sector (4.96%) and significantly lower than in the 'agriculture' (7.27%) and 'manufacturing' (12.47%) sectors. However, the sector employs more than double the number of people than the 'food, beverages and tobacco sector' (1.96%).

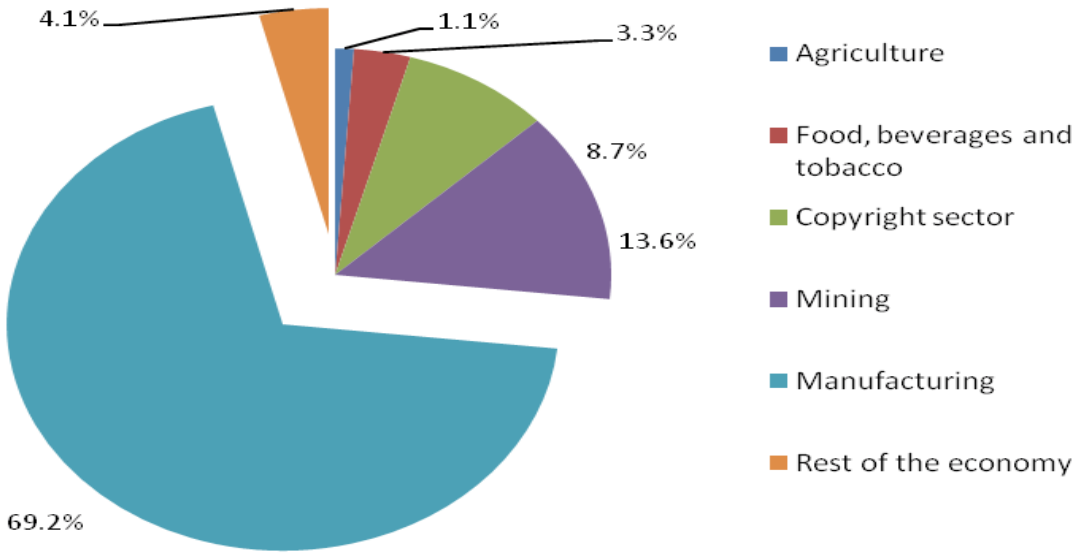
Figure 7: Employment Contribution: Comparison with Other Sectors – 2008



Source: Authors' calculations with data from the Department of Labour, the Department of Arts and Culture (DAC), Quantec databases and the South African Reserve Bank (SARB).

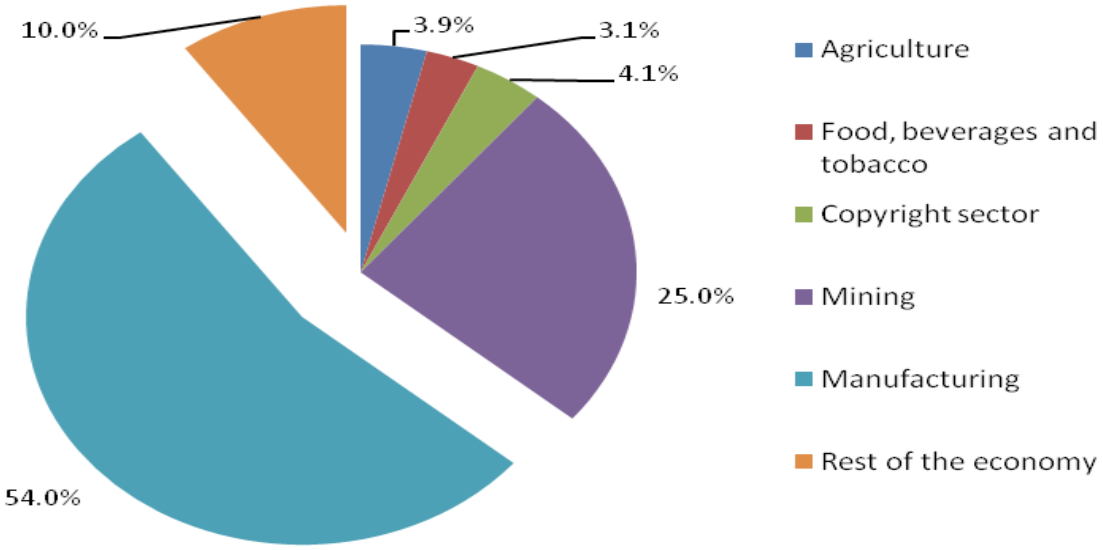
Regarding the trade of the copyright sector, the imports contribution to the total economy is 8.67% – much higher than the 'agriculture' and 'food, beverages and tobacco' industries (1.09% and 3.31%). But as seen in figure 8, the 'manufacturing' and 'mining' sectors were the main importers of the economy in 2008. The picture is not dissimilar in the analysis of the exports of the economy (figure 9). It should be noted that the copyright sector contributes 4.07% of the country's export activity, while 'food, beverages and tobacco' and the 'agriculture' sectors are below the 4% mark and 'mining' and 'manufacturing' sectors were the dominant exporters of the country in 2008.

Figure 8: Imports Contribution: Comparison with Other Sectors – 2008



Source: Authors' calculations with data from the Department of Arts and Culture (DAC), the South African Reserve Bank (SARB), the South African Revenue Service (SARS) and Quantec databases.

Figure 9: Exports Contribution: Comparison with Other Sectors – 2008



Source: Authors' calculations with data from the Department of Arts and Culture (DAC), the South African Reserve Bank (SARB), the South African Revenue Service (SARS) and Quantec databases.

5.3 Core Copyright-Based Industries

Core copyright industries include activities/industries engaged in creation, production and manufacturing performance, broadcast, communication and exhibition or distribution and sales of works and other protected subject matter. In 2008, the economic performance of core copyright-based industries was approximately 2% of the entire national economy. Their contribution to employment was 2.3% while their exports and imports were responsible for not more than 0.5% of the national economy.

As shown in table 5, the value-added of the two major industries that are included in the core copyright-based industries ('film and television' and 'photography, software and databases, advertising') increased drastically the last eight years, affecting the overall trend of the core copyright-based industries that increased substantially during the 1990s and the 2000s (17% and 24% respectively).

With regards to employment, core copyright-based industries have kept rising since the 1970s with a higher increase in the 1990s. Employment of 'Photography, software and databases, advertising' has known an impressive increase through the last 40 years, more than doubling during the 1980s (table 5).

Table 5: Value-Added, Employment, Imports and Exports Growth of Core Copyright-Based Industries in % 1970 to 2008

	Value-added			
	Printing, publishing and recorded media	Film and television	Photography, software and databases, advertising	Core
1970-1979	30%	33%	23%	28%
1980-1989	-1%	2%	9%	3%
1990-1999	-2%	7%	39%	17%
2000-2008	-6%	30%	40%	24%

Table 5: Value-Added, Employment, Imports and Exports Growth of Core Copyright-Based Industries in % 1970 to 2008 (Continued)

	Employment			
	Printing, publishing and recorded media	Film and television	Photography, software and databases, advertising	Core
1970-1979	20%	21%	79%	33%
1980-1989	8%	9%	106%	36%
1990-1999	6%	32%	98%	51%
2000-2008	10%	10%	45%	30%
	Imports			
	Printing, publishing and recorded media		Photography, software and databases, advertising	Core
1970-1979	12%		-13%	9%
1980-1989	-18%		-12%	-17%
1990-1999	24%		-2%	21%
2000-2008	-31%		-8%	29%
	Exports			
	Printing, publishing and recorded media		Photography, software and databases, advertising	Core
1970-1979	-56%		-55%	-55%
1980-1989	-59%		127%	-14%
1990-1999	308%		116%	202%
2000-2008	36%		228%	108%

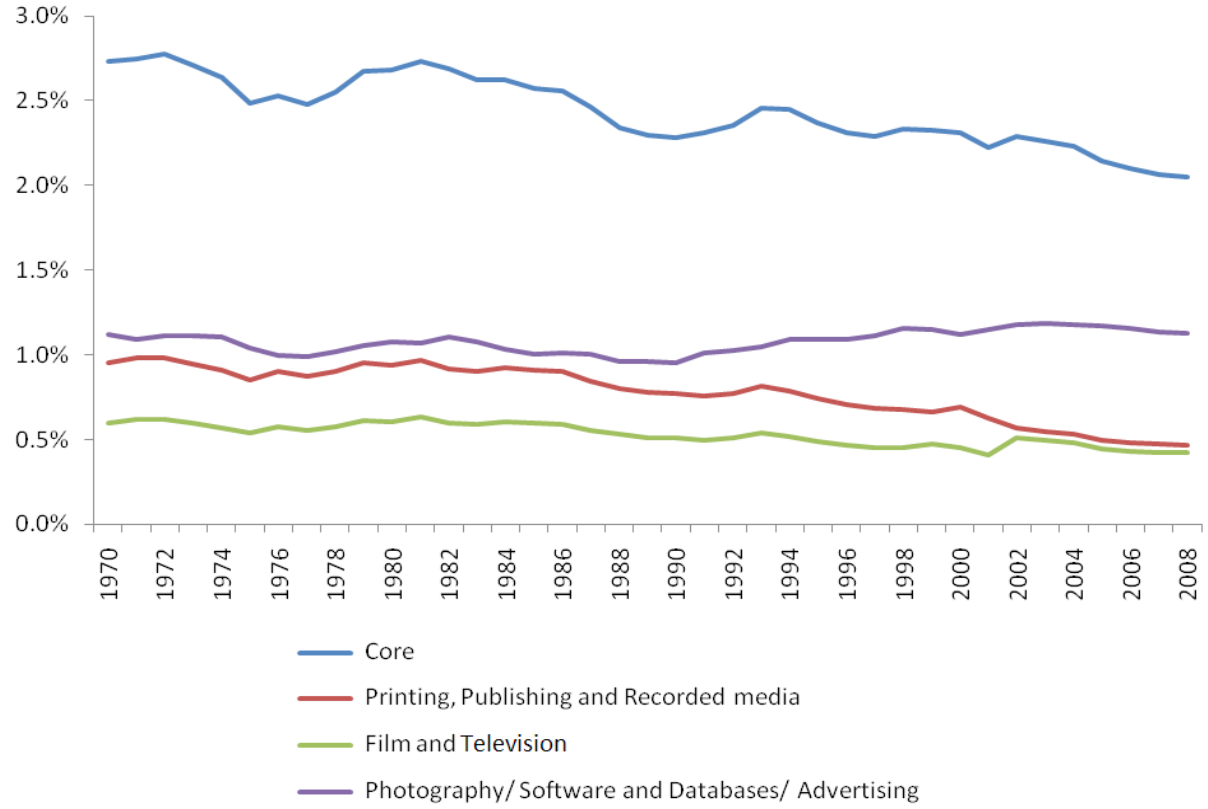
Source: Authors' calculations with data from the Department of Labour, the Department of Arts and Culture (DAC), Quantec databases, the South African Reserve Bank (SARB) and the South African Revenue Service (SARS).

As far as trade of core copyright-based industries is concerned, they experienced an increase of their imports during the 1990s as a result of the re-opening of the economy to the rest of the world, however the imports decreased by 29% in the 2000s (table 5). From the exports point of view, the fact that exports of the total core copyright-based industries have increased by 202% and 108% in the 1980s and 1990s, respectively, is very encouraging for the sectors.

Except for the sectors' growth throughout the period, it is of high importance to examine the evolution of their contribution to the total economy. Although the growth of value-added was significant, the contribution of core copyright-based industries to total value-added of the economy has shown a decreasing trend since 1970. An average increase of 2.74% of the total valued-added for the period 1970 to 2008 in combination with a much lower average increase of the value-added of the core copyright-based industries (1.99%), lead to an overall decrease of the contribution of the core industries as defined by the ratio *core copyright-based industries' value-added/total economy's value-added*. Among the main sub-categories only the contribution of 'Photography, software and databases, advertising' presented a minor increase in the period 1970 to 2008.

On the contrary, the 'printing, publishing and recorded media' industry has experienced a rising decrease since 1980. This trend can be linked to two main facts, as also mentioned in the section dealing with trade of the core copyright-based industries. It is either indicative of low interest of the South African consumers for the products of these industries or a lower comparative advantage to the rest of the world leading to less demand of the products of the particular industry.

Figure 10: Core Copyright-Based Industries: Contribution to Total Value-Added

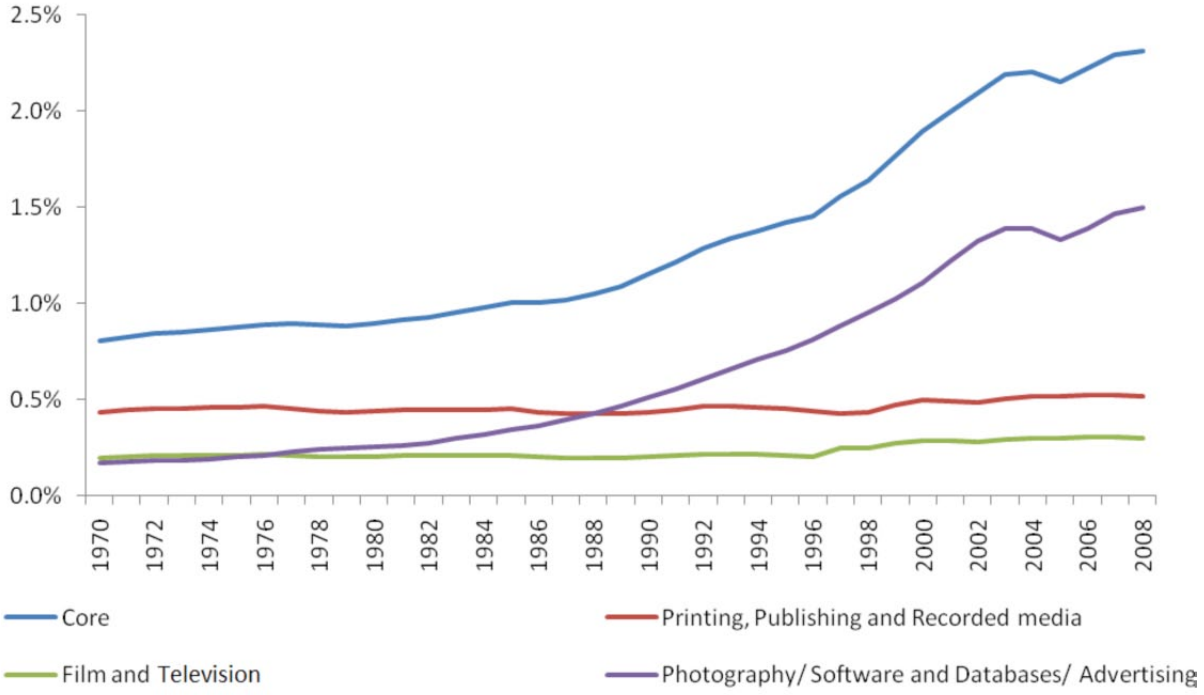


Source: Authors' calculations with data from the Department of Arts and Culture (DAC), Quantec databases and the South African Reserve Bank (SARB).

In figure 10, it is shown that the contribution of core copyright-based industries has decreased in the studied period but has always remained within the range of 2 to 3%. The main sectors that are included in the core copyright-based industries showed stability with very small fluctuations, for instance 'printing, publishing and recorded media' presented a relative decrease from 1970 to 2008.

In figure 11, it is shown that the contribution of core copyright-based industries to total employment has increased considerably from 0.81% in 1970 to 2.31% in 2008. This increase can be attributed mainly to the rising contribution of the 'Photography, software and databases, advertising' to the economy in its entirety.

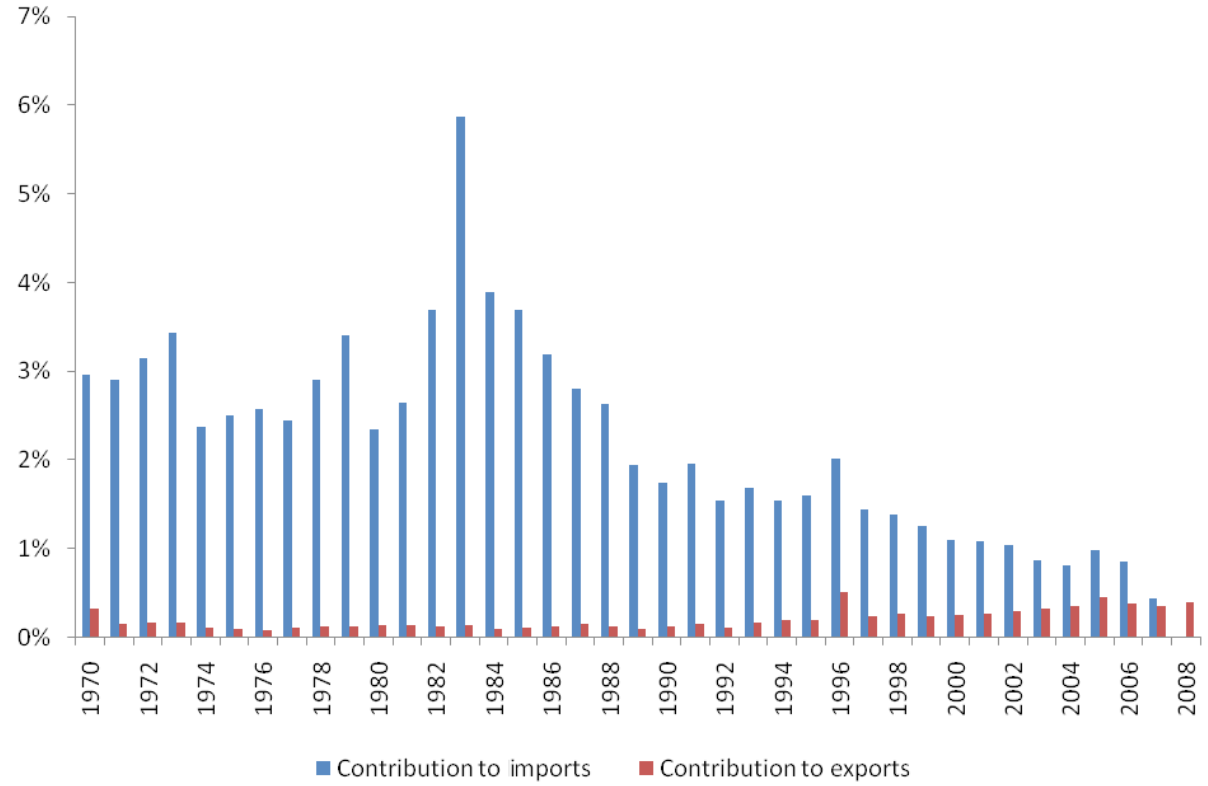
Figure 11: Total Core Copyright-Based Industries: Contribution to Employment



Source: Authors' calculations with data from the Department of Labour, the Department of Arts and Culture (DAC), Quantec databases and the South African Reserve Bank (SARB).

In figure 12, the contribution of core copyright-based industries to the total trade of South Africa is presented. The contribution to imports has experienced an overall decreasing trend with a big hike in the middle of the 1980s which later, at the end of the 1980s, was neutralised by a high decline while on the other side the contribution to exports has increased to a small extent remaining however, at levels lower than 0.5%.

Figure 12: Core Copyright-Based Industries: Contribution to Imports and Exports



Source: Authors' calculations with data from the Department of Arts and Culture (DAC), the South African Reserve Bank (SARB), the South African Revenue Service (SARS) and Quantec databases.

5.4 Interdependent Copyright-Based Industries

Interdependent copyright industries include those engaged in production, manufacture and sale of equipment whose function is wholly or primarily to facilitate the creation, production or use of works and other protected subject matter. In 2008, the economic performance of interdependent copyright-based industries was approximately 0.5% of the entire national economy. Their contribution to employment was 0.5% while their exports contribution was almost 7.9% of the national economy. Their imports were responsible for 2.7% of the total imports in South Africa.

Table 6: Value-Added, Employment, Imports and Exports Growth of Interdependent Copyright-Based Industries in % from 1970 to 2008

	Value-added				
	Television, radio and communication	Computers and equipment, photocopiers	Photographic and cinematographic instruments	Paper and paper products	Interdependent
1970-1979	125%	58%	75%	65%	63%
1980-1989	11%	-17%	0%	35%	20%
1990-1999	8%	-14%	0%	14%	15%
2000-2008	29%	70%	199%	33%	40%

Table 6: Value-Added, Employment, Imports and Exports Growth of Interdependent Copyright-Based Industries in % from 1970 to 2008 (Continued)

	Employment			
	Television, radio and communication	Computers and equipment, photocopiers	Paper and paper products	Interdependent
1970-1979	110%	36%	2%	31%
1980-1989	-2%	3%	30%	8%
1990-1999	19%	-6%	-14%	-5%
2000-2008	-46%	30%	2%	16%
	Imports			
	Television, radio and communication	Computers and equipment, photocopiers	Paper and paper products	Interdependent
1970-1979	-15%	-35%	-31%	-33%
1980-1989	54%	2%	-31%	3%
1990-1999	454%	92%	50%	128%
2000-2008	56%	136%	81%	111%
	Exports			
	Television, radio and communication	Computers and equipment, photocopiers	Paper and paper products	Interdependent
1970-1979	7%	-44%	-17%	133%
1980-1989	149%	31%	151%	70%
1990-1999	274%	219%	54%	155%
2000-2008	29%	88%	-27%	54%

Source: Authors' calculations with data from the Department of Labour, the Department of Arts and Culture (DAC), Quantec databases, the South African Reserve Bank (SARB) and the South African Revenue Service (SARS).

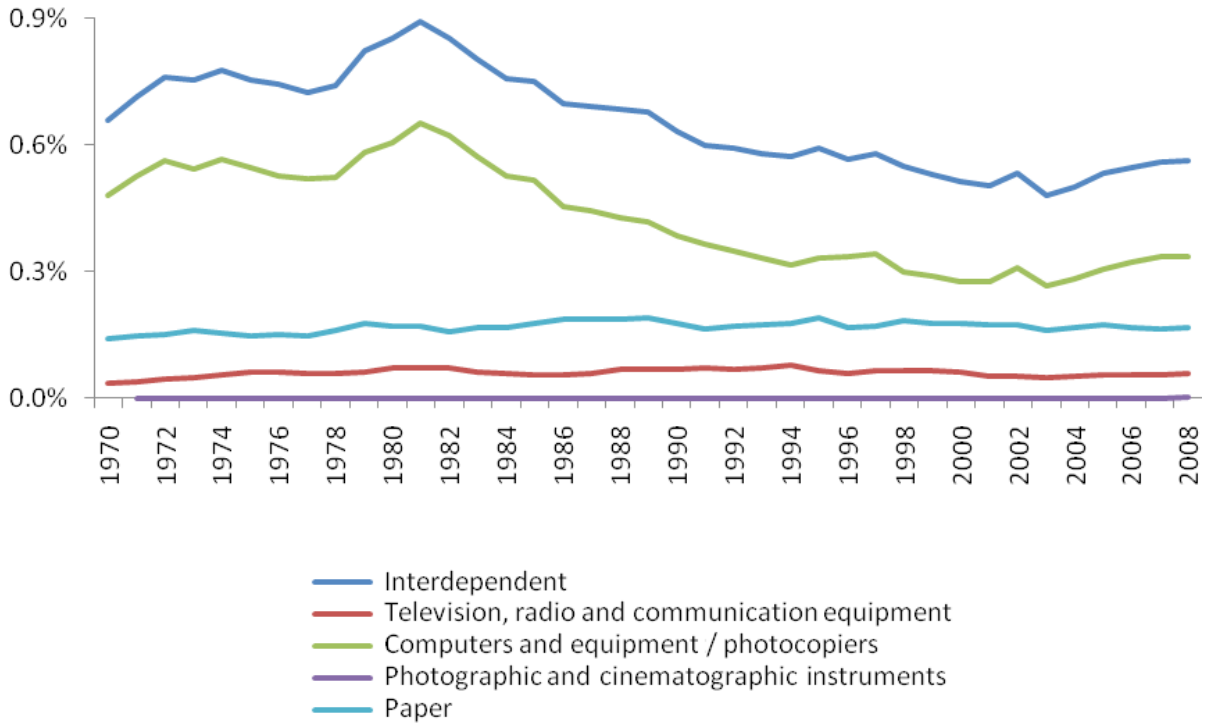
All the sub-categories that are included in the interdependent copyright-based industries experienced a significant increase in their value-added, especially in the period 2000 to 2008 (table 6). In the 1990s, a deceleration was experienced – presented either by a decrease ('computers and equipment') or a lower increase than the previous years ('television, radio and communication' and 'paper'). However, the industries with the negative growth in value-added during the 1990s almost caught up with the rest by showing a high increase in the 2000s ('computers and equipment, photocopiers'=70%, 'photographic and cinematographic instruments'=199%).

As can be seen in table 6, the growth of employment of the total interdependent copyright-based industries was negative in the 1990s but recovered in the 2000s. This decrease can be attributed to a decrease in 'computers and equipment, photocopiers' and 'paper and paper products" employment, -6% and -14%, respectively, while the 'television, radio and communication equipment' enjoyed a 19% growth. On the contrary, in the 2000s 'television, radio and communication equipment' showed a different picture with a decrease of 46% that was not however, able to influence the overall increase of the interdependent industries' employment (16%). This decreasing trend can be attributed to the fact that the production might have turned to more capital intensive – hence, less labour intensive – methods.

The growth of the interdependent copyright-based industries with regards to trade has been significant for the years after the end of sanctions. Both imports and exports increased substantially in the 2000s (table 6) with the exception of 'paper and paper products' whose exports declined by 27% during the period 2000 to 2008. As expected, the highest increases were experienced in the 1990s.

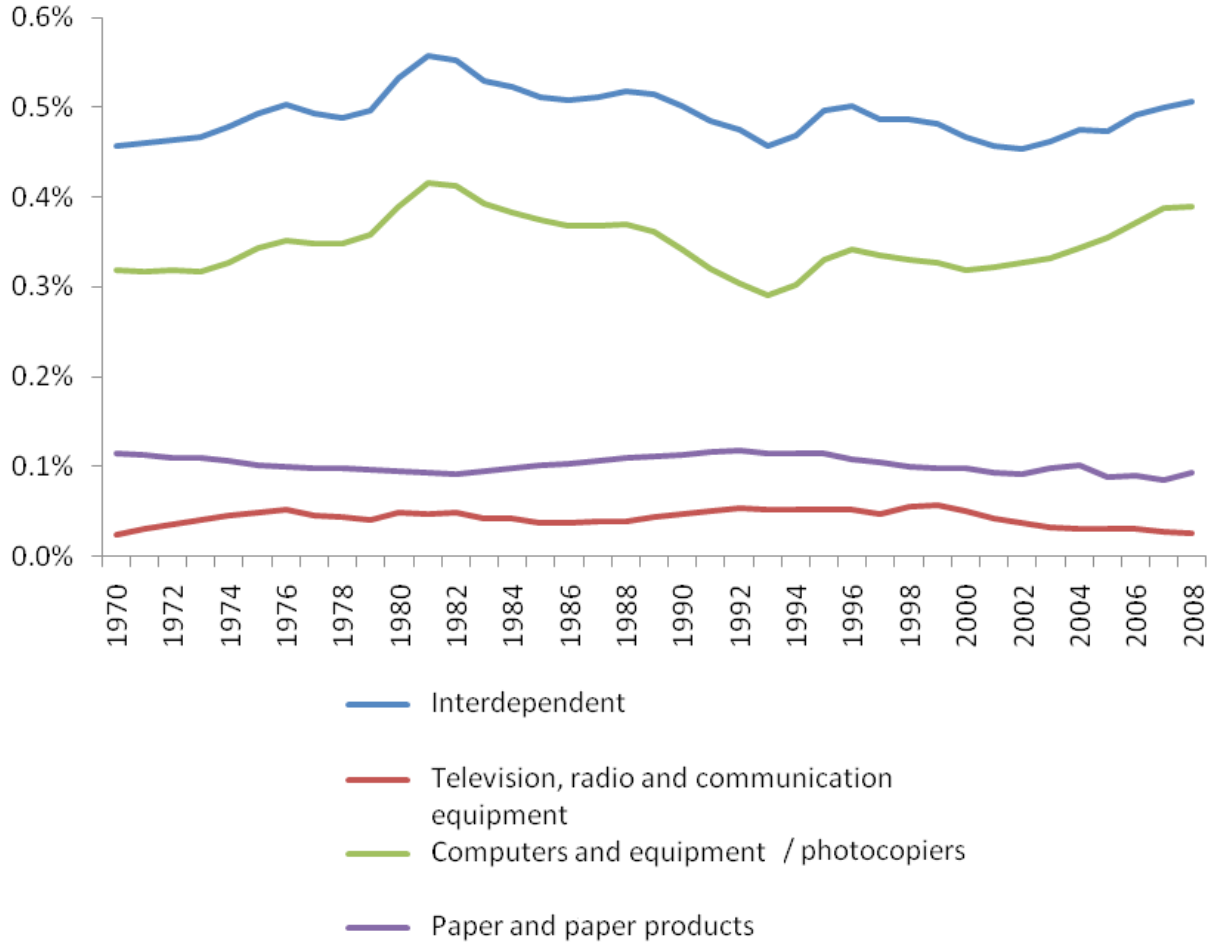
As far as the evolution of the interdependent copyright-based industries' contribution is concerned, figure 13 shows a decrease in the contribution of interdependent copyright-based industries to the total value-added. However, putting that into perspective, the total interdependent copyright-based industries have never contributed more than 0.9% to the total economy. Therefore, the decrease – although significant – was not major. All the independent sub-categories, except from 'computers and equipment, photocopiers', have remained constant during the period 1970 to 2008.

Figure 13: Interdependent Copyright-Based Industries: Contribution to Value-Added



Source: Authors' calculations with data from Quantec databases, the Department of Arts and Culture (DAC) and the South African Reserve Bank (SARB).

Figure 14: Interdependent Copyright-Based Industries: Contribution to Employment

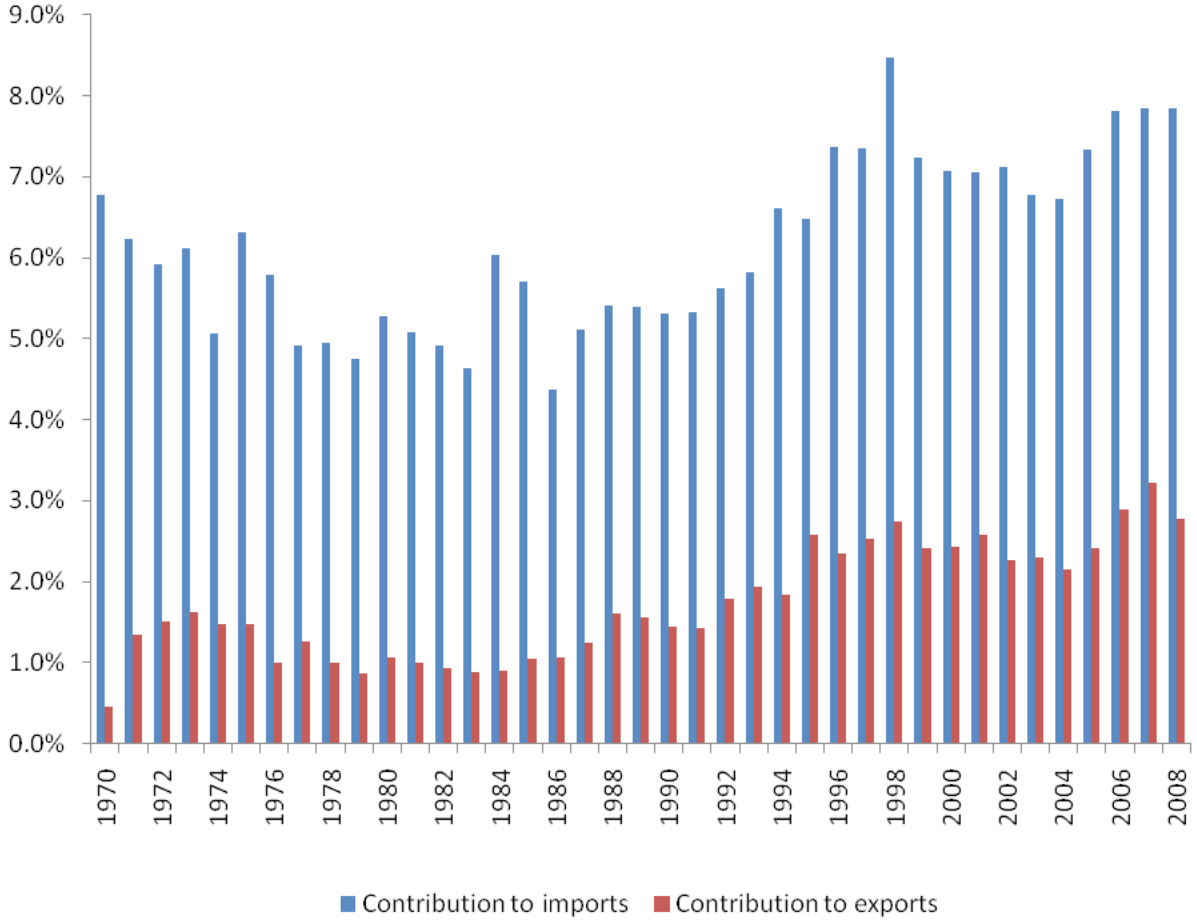


Source: Authors' calculations with data from the Department of Labour, the Department of Arts and Culture (DAC), Quantec databases and the South African Reserve Bank (SARB).

The contribution of the interdependent copyright-based industries to employment has remained in very low levels – below 0.6%. The contribution of the interdependent copyright-based industries separately has not exceeded 0.4% of the total employment and remained relatively constant through the years (figure 14).

The contribution of the interdependent copyright-based industries to the overall trade is presented in figure 15. Both contribution to exports and imports show a similar increasing trend during the last 40 years.

Figure 15: Interdependent Copyright-Based Industries: Contribution to Imports and Exports



Source: Authors' calculations with data from the Department of Arts and Culture (DAC), the South African Reserve Bank (SARB), the South African Revenue Service (SARS) and Quantec databases.

5.5 Partial Copyright-Based Industries

Partial copyright industries include those in which a portion of the activities is related to works and other protected subject matter and may involve creation, production and manufacturing, performance, broadcast, communication and exhibition or distribution and sales. In 2008, their contribution on all indicators analysed was approximately 0.2% with the exception of imports (0.36%).

Table 7: Value-Added, Employment, Imports and Exports Growth of Partial Copyright-Based Industries in % 1970 to 2008

	Value-added				
	Apparel, textiles and footwear	Furniture, jewellery, musical instruments, games and toys	Crafts	Glass and glass products	Partial
1970-1979	53%	28%	48%	38%	36%
1980-1989	2%	124%	60%	25%	94%
1990-1999	-13%	-5%	-8%	15%	-6%
2000-2008	18%	25%	22%	71%	24%

Table 7: Value-Added, Employment, Imports and Exports Growth of Partial Copyright-Based Industries in % 1970 to 2008 (Continued)

	Employment				
	Apparel, textiles and footwear	Furniture, jewellery, musical instruments, games and toys	Crafts	Glass and glass products	Partial
1970-1979	20%	34%	28%	-3%	29%
1980-1989	1%	47%	24%	20%	30%
1990-1999	-24%	5%	19%	-11%	12%
2000-2008	-36%	0%	-20%	11%	-13%
	Imports				
	Apparel, textiles and footwear	Furniture, jewellery, musical instruments, games and toys	Glass and glass products		Partial
1970-1979	-53%	-27%	-49%		-31%
1980-1989	-22%	-8%	1%		-9%
1990-1999	109%	183%	85%		175%
2000-2008	114%	164%	111%		160%
	Exports				
	Apparel, textiles and footwear	Furniture, jewellery, musical instruments, games and toys	Glass and glass products		Partial
1970-1979	15%	91%	174%		93%
1980-1989	-20%	108%	13%		101%
1990-1999	33%	18%	40%		18%
2000-2008	-72%	25%	-22%		23%

Source: Authors' calculations with data from the Department of Labour, the Department of Arts and Culture (DAC), Quantec databases, the South African Reserve Bank (SARB) and the South African Revenue Service (SARS).

The value-added of the partial copyright-based industries increased significantly from 1970 to 1989, declined by 6% in the 1990s and has increased since 2000 by 24% (table 7). All the sub-categories showed a decline in the period from 1990 to 1999, with the exception of 'glass and glass products'. This decrease can be attributed to the comparative disadvantage of the particular products, also expressed in the high increase of imports and lower increase of exports during the 1990s and after the opening of the country to the international markets.

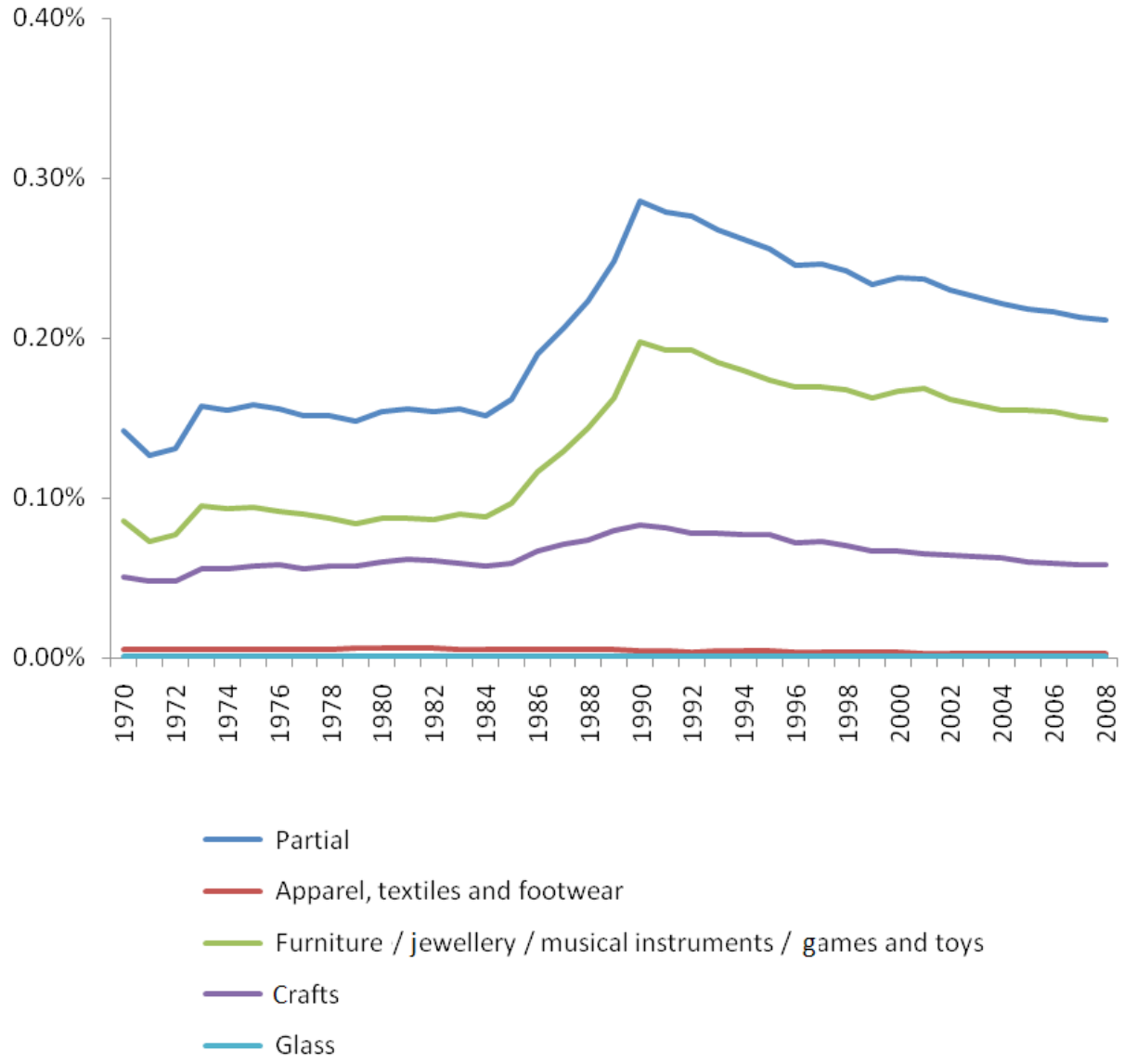
The employment of the partial copyright-based industries showed a declining trend in the last decade with 'apparel, textiles and footwear' employing 36% less employees in the period 2000 to 2008 as a result of the decline of the production (value-added) in the 1980s and 1990s (table 7).

Contrary to other copyright-based industries, the imports of the partial copyright-based industries increased greatly in the last two decades (table 7). However, the exports showed a small but not unimportant increase (23%) during the 2000s (table 7) while the 'apparel, textiles and footwear' exported almost 72% less in 2008 than in 2000. The growth of exports in the 1990s with the opening of the economy was not as high as in other sectors with 'glass and glass products' increasing by almost 40% and 'apparel, textiles and footwear' by 33%.

These results show once more the comparative disadvantage of the partial copyright-based industries in the period when the sanctions ended and the South African economy opened to the world. The imports of the individual industries were substantially higher than their exports showing a clear interest of the South African consumers for international products of the partial copyright-based industries.

With regards to the partial copyright-based industries' contribution, even though the growth of 'glass and glass products' value-added was substantial, its contribution to the total value-added was negligible. The minor rise of the contribution of the total partial copyright-based industries at the end of 1980s did not last long. It returned to its initial levels of 0.05% at the end of 1990s.

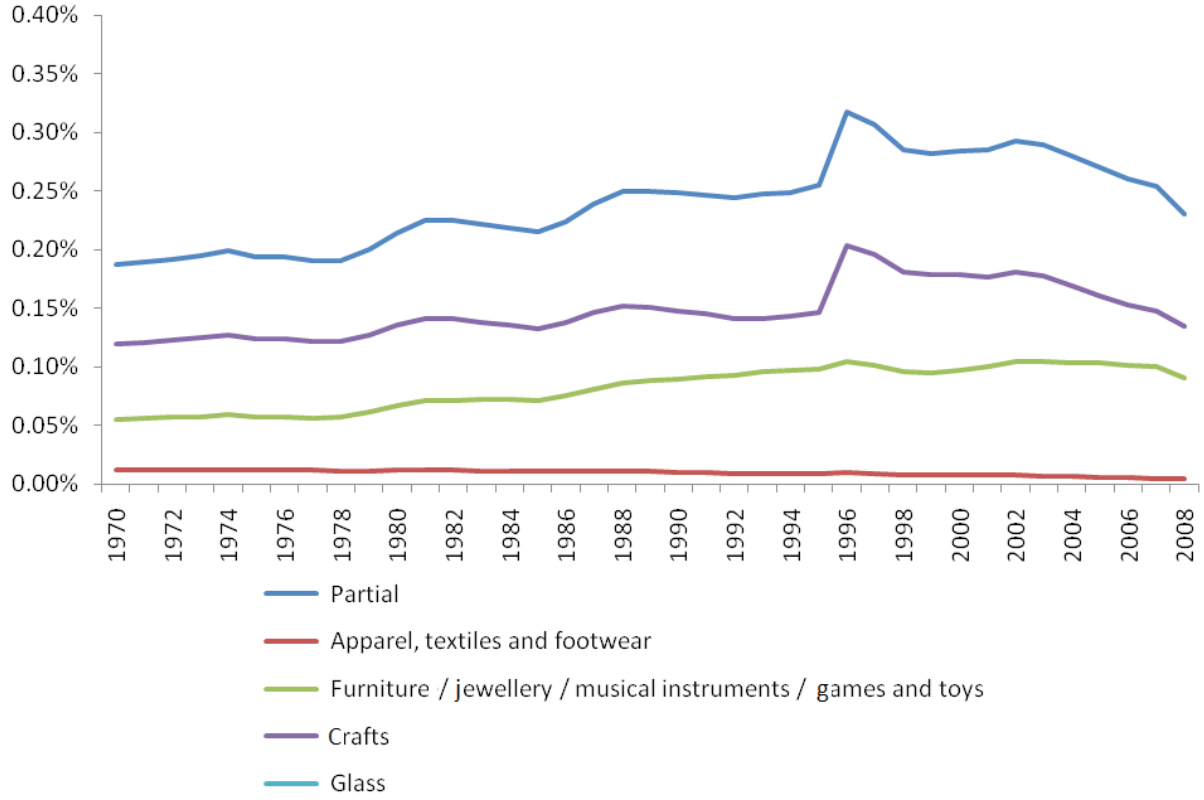
Figure 16: Partial Copyright-Based Industries: Contribution to Value-Added



Source: Authors' calculations with data from the Department of Arts and Culture (DAC), Quantec databases and the South African Reserve Bank (SARB).

Their contribution to the total workforce of the country started declining in 1996, after a steep increase in the period 1994 to 1996. Only the 'crafts' industry follows the overall trend, showing that it is the main contributor to partial copyright-based industries, with regards to employment.

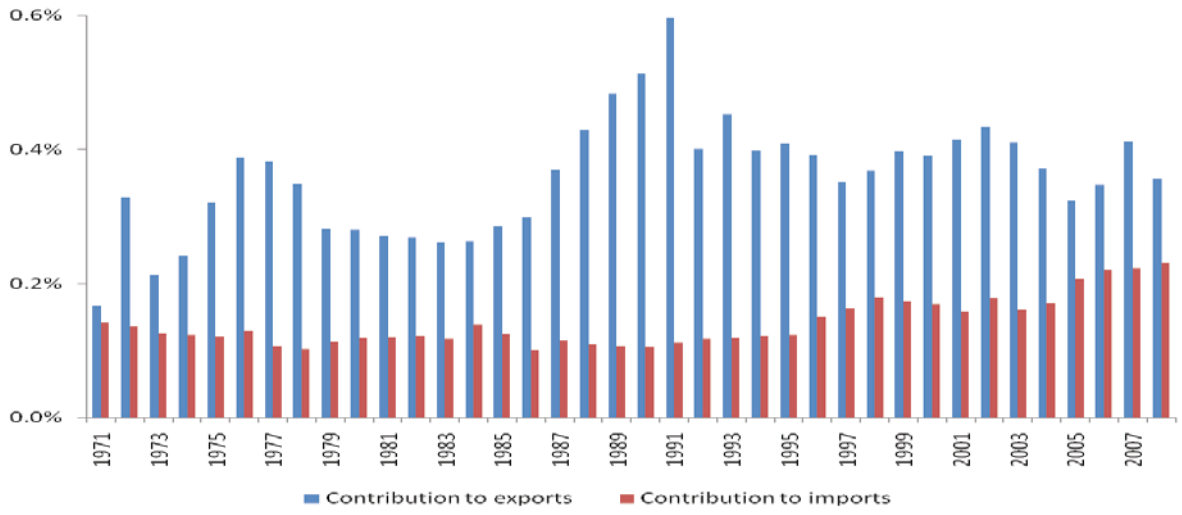
Figure 17: Partial Copyright-Based Industries: Contribution to Employment



Source: Authors' calculations with data from the Department of Labour, the Department of Arts and Culture (DAC), Quantec databases and the South African Reserve Bank (SARB).

As far as partial copyright-based industries contribution to trade is concerned, both contribution to exports and imports showed an increasing trend. Then again, the contribution to trade was never higher than 0.05%, not having a significant impact in the country's trade.

Figure 18: Partial Copyright-Based Industries: Contribution to Imports and Exports



Source: Authors' calculations with data from the Department of Arts and Culture (DAC), the South African Reserve Bank (SARB), the South African Revenue Service (SARS) and Quantec databases.

5.6 Non-Dedicated Copyright-Based Industries

Non-dedicated copyright industries include those in which a portion of the activities is related to facilitating, broadcast, communication, distribution or sales of works or other protected subject matter and whose activities have not been included in the core copyright industries. In 2008, the economic performance of non-dedicated copyright-based industries was approximately 1.3% of the entire national economy. Their contribution to employment was 1.03% while their exports contribution was less than 0.2% of the national economy. Their imports were responsible for only 0.55% of the total imports in South Africa.

Table 8: Value-Added, Employment, Imports and Exports Growth of Non-Dedicated Support Copyright-Based Industries in % 1970 to 2008

	Value-added		
	Wholesale and retail trade	Transport, storage and communication	Non-dedicated support
1970-1979	35%	63%	44%
1980-1989	20%	15%	18%
1990-1999	21%	50%	31%
2000-2008	36%	57%	45%
	Employment		
	Wholesale and retail trade	Transport, storage and communication	Non-dedicated support
1970-1979	30%	48%	21%
1980-1989	18%	-3%	10%
1990-1999	21%	-28%	4%
2000-2008	21%	2%	17%
	Imports		
	Wholesale and retail trade	Transport, storage and communication	Non-dedicated support
1970-1979	52%	-20%	-20%
1980-1989	10%	49%	49%
1990-1999	17%	27%	27%
2000-2008	-11%	9%	8%
	Exports		
	Wholesale and retail trade	Transport, storage and communication	Non-dedicated support
1970-1979	-18%	13%	1%
1980-1989	105%	18%	40%
1990-1999	158%	70%	100%
2000-2008	34%	62%	50%

Source: Authors' calculations with data from the Department of Labour, the Department of Arts and Culture (DAC), Quantec databases, the South African Reserve Bank (SARB) and the South African Revenue Service (SARS).

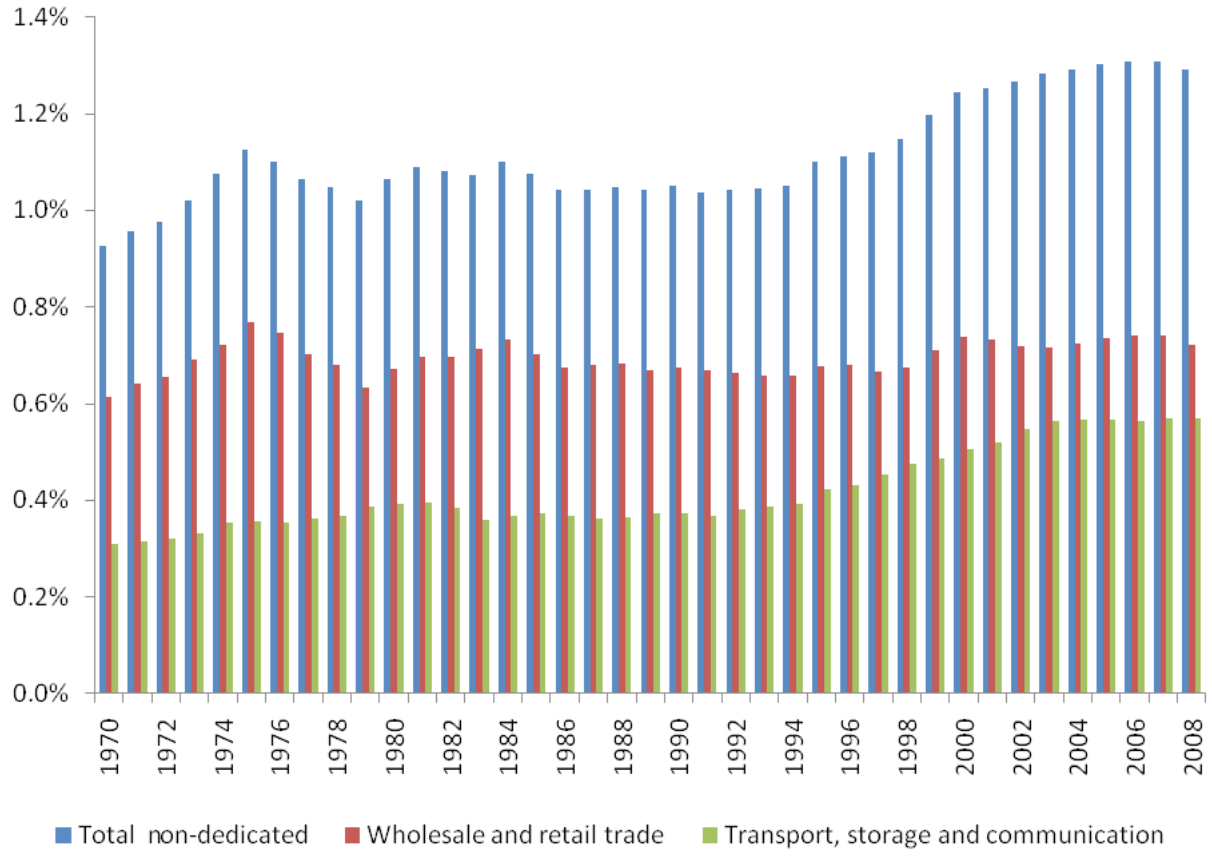
The value-added of the non-dedicated copyright-based industries has been continually increasing since 1970. More specifically, the 'transport, storage and communication' sector's value-added increased by 57% in the 2000s and the 'wholesale and retail trade' by 36% (table 8).

With regards to employment, the non-dedicated copyright-based industries increased their number of employees overall (17% in the 2000s). However, the increase in the 'transport, storage and communication' was at the low level of 2% (table 8).

The non-dedicated copyright-based industries imports have shown an increase in the 2000s of 8% while the one of the two main sub-categories' ('wholesale and retail trade') imports have decreased by 11% in the same period. The exports of this group have increased substantially through the last 30 years (40% in 1980s, 100% in 1990s and almost 50% in 2000s) (table 8).

Their contribution to the economy's value-added has shown a rising trend from 0.93% in 1970 to 1.29% in 2008 (figure 19). This increase may be accredited to the increase of the contribution of the 'transport, storage and communication' sector, while the 'wholesale and retail trade' contribution remained more or less stable in the range between 0.6 and 0.8%.

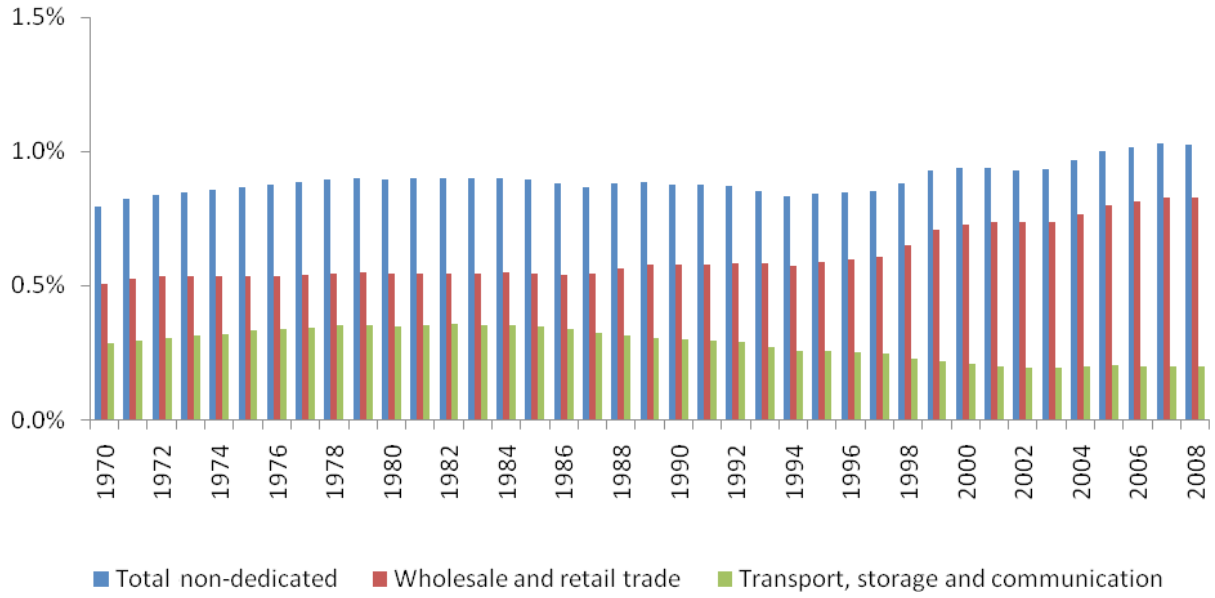
Figure 19: Non-Dedicated Copyright-Based Industries: Contribution to Value-Added



Source: Authors' calculations with data from the Department of Arts and Culture (DAC), Quantec databases and the South African Reserve Bank (SARB).

The non-dedicated copyright-based industries' contribution to the total labour of the country has increased from 0.79% in 1970 to 1.026% in 2008, not a drastic increase but one that should be taken into consideration (figure 20). However, the 'transport, storage and communication' sector's contribution to the total workforce has experienced a decreasing trend after 1984, from 0.325% in 1984 to 0.2% in 2008.

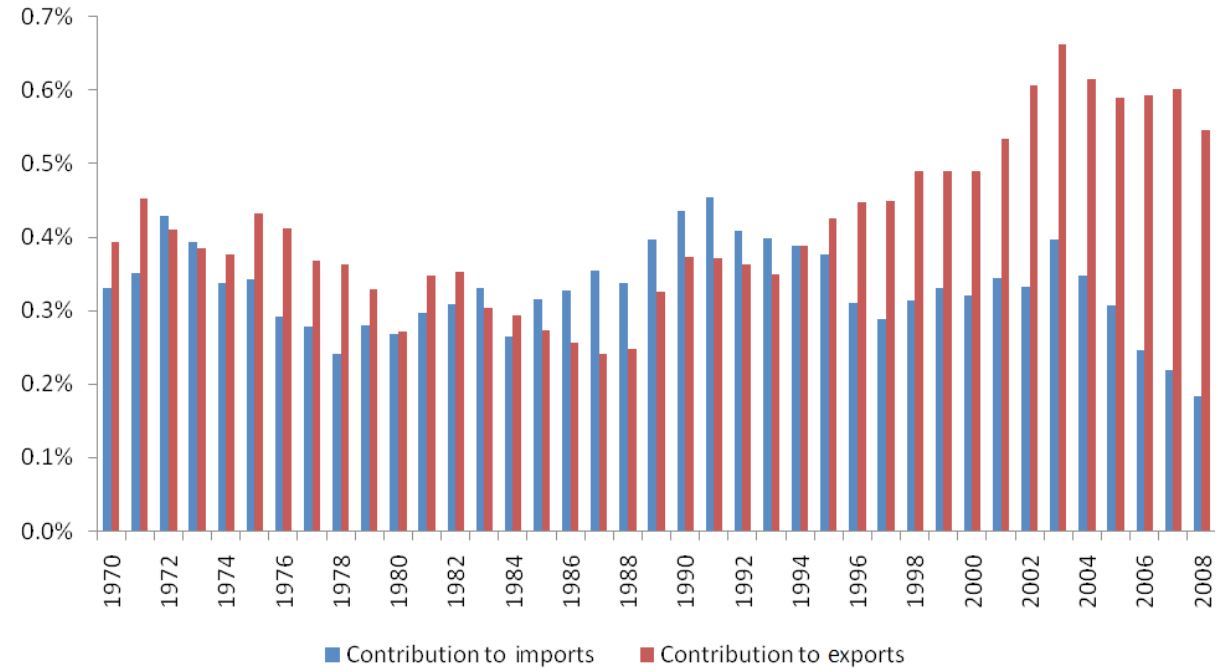
Figure 20: Non-Dedicated Copyright-Based Industries: Contribution to Employment



Source: Authors' calculations with data from the Department of Labour, the Department of Arts and Culture (DAC), Quantec databases and the South African Reserve Bank (SARB).

In figure 21, it can be seen that the contribution to imports of the non-dedicated copyright-based industries has been decreasing since the 1990s while its contribution to exports has shown an increasing trend since 1988. Although the trends have changed in comparison with the 1970s, the contribution of non-dedicated copyright-based industries in the total trade has not exceeded 0.7% for exports and 0.5% for imports.

Figure 21: Non-Dedicated Copyright-Based Industries: Contribution to Imports and Exports



Source: Authors' calculations with data from the Department of Arts and Culture (DAC), the South African Reserve Bank (SARB), the South African Revenue Service (SARS) and Quantec databases.

6. Discussion

The purpose of this study was to investigate the contribution of copyright-based industries to the South African economy. The results of the analysis show that the copyright-based industries contribute significantly to the total value-added, employment and trade. The results show that the copyright-based industries contribute more than the agriculture and food and beverage sectors, however their contribution is lower than traditionally big contributors such as 'mining' and 'manufacturing'.

The copyright-based industries are responsible for almost 4.11% of the total economy in terms of value-added, with core copyright-based industries being the highest contributor (2.05%) and the non-dedicated copyright industries following with 1.29%. As far as employment is concerned, 4.08% of the workforce is employed in the copyright-based industries, the majority of which is employed in the core and non-dedicated copyright-based industries (2.31% and 1.03%). The interdependent copyright-based industries show a high contribution in the exports of the economy (2.77%) and an even higher contribution to the total imports (7.85%).

The contribution of the total copyright-based industries in South Africa in terms of value-added (4.11%) is significantly lower than the other countries, whose studies were reviewed. Only Bulgaria's overall contribution of copyright-based industries to total value-added was lower than South Africa's (2.38%). The rest of our results are in agreement with international standards that also indicate a higher contribution of the core copyright-based industries for all indicators. Following the comparison, in South Africa the non-dedicated support copyright-based industries present a higher contribution to the total economy than in the other international studies.

This study uses a complete Input-Output analysis calculating multipliers to show not only the direct effects of the copyright-based industries but also the indirect effects to the economy. In table 9, the production-induced effect of a number of industries on total output is presented. This multiplier sums up first-round effects (how much an industry must increase its inputs from other industries and from itself, in order to produce an extra unit of output to meet a ZAR1.00 increase in final demand) and industrial support effects (how much other industries will need to increase their purchases to expand their output to meet the first-round requirements).

The only industries missing from the Input-Output analysis are 'film and television' and 'crafts'. In order to estimate the total production-induced effect we assume that their indirect effects would be proportionately dependent on their direct contribution of 2008 and the relative indirect effects of 'printing, publishing and recorded media' and 'furniture' industries respectively. For example, the 'film and television' direct contribution was 0.42%, the 'printing publishing and recorded media' was 0.47% and the latest production-induced effect was 1.79%. Based on this we assume that 'film and television's' production-induced effect was 1.6%.

Table 9: Production-Induced Effect of Copyright-Based Industries (Input-Output 2009)

	Production-induced effect	Adjusted for copyright factors	Production-induced effect	Adjusted for copyright factors
Industry	Outcome		Employment	
Photography, software and databases, advertising	1.13%	0.11%	2.97%	0.30%
Communication	1.18%	0.07%	2.73%	0.16%
Crafts*	0.76%	0.32%	2.87%	1.21%
Film and television*	1.60%	1.60%	2.98%	2.98%
Footwear	2.08%	0.01%	6.23%	0.02%
Furniture	1.93%	0.19%	6.48%	0.65%
Glass and glass products	1.49%	0.01%	4.89%	0.03%
Computers and equipment, photocopiers	1.70%	0.06%	4.93%	0.17%
Other manufacturing	1.23%	0.12%	3.65%	0.37%

Table 9: Production-Induced Effect of Copyright-Based Industries (Input-Output 2009) (Continued)

Paper and paper products	2.02%	0.50%	5.77%	1.44%
Printing, publishing and recorded media	1.79%	1.79%	5.17%	5.17%
Television, radio and communication equipment	1.64%	0.57%	4.75%	1.66%
Textiles	1.81%	0.01%	6.05%	0.02%
Transport and storage	1.19%	0.07%	3.02%	0.17%
Wearing apparel	1.59%	0.01%	6.19%	0.02%
Wholesale and retail trade	1.00%	0.06%	2.63%	0.15%
Total		**5.49%**		**14.52%**

Where * denotes industries with figures by extrapolation
Source: Authors' calculations with data the Supply and Use Tables (SUT) of Statistics South Africa (Stats SA).

The results presented in table 9 illustrate the importance of the copyright-based industries for the South African economy. The overall production-induced effect in terms of value-added is 5.49% while the production-induced effect to total employment is 14.52%.

If appropriate policies are implemented resulting in an increase of the demand for products for instance of the sector 'printing, publishing and recorded media' a series of links will occur affecting through individual sectors the economy in its entirety. If the demand for 'printing, published and recorded media' products increases by ZAR 100 000 the industry must increase its inputs from other industries and from itself by R69 000 (first-round effects multiplier).

This need will increase the demand of products of other industries such as for example another copyright-based industry: 'paper and paper products', among others. Now, the 'paper and paper products' industry needs to increase its supply of products to cover the needs of 'printing, publishing and recorded media' industry. To do so, it will need to increase its inputs by ZAR0.78 for every ZAR1.00 of demand.

But also such an increase in the 'printing, published and recorded media' industry will also influence other sectors in the economy. Among the inputs that 'printing, published and recorded media' will need in order to meet an increase in the demand is for example some form of energy, i.e. electricity. To cover the new demand for its product, the sector 'electricity, gas and steam' will have to increase their inputs by ZAR0.465 for every ZAR1.00 of demand.

Similar effects will be experienced with the employment and trade of the sectors that are trying to meet the increased demand, they will affect various other industries by asking for inputs.

An important issue not covered on the above analysis is the concerns related to the deficit of copyright royalty flows. We discuss the issue below.

6.1 Copyright in Trade

An important concern is related to the argument that copyright benefits exporting countries at the cost of countries like South Africa which are net importers of copyright material. The issue has been studied in the "Gowers Review of Intellectual Property (2006)[41] in the UK, by the Office of Regulation Review (1995) in Australia and others. More recently, IPO (2009)[42] took this study a step further and according to the Australian government the majority of the recommendations will soon be implemented.[43]

[41] Gowers Review (2006). "*Gowers Review of Intellectual Property*". HMSO, Norwich, NR3 1BQ
[42] Intellectual Property Office (IPO), 2009, "*Taking forward the Gowers Review of Intellectual Property: Second Stage Consultations on Copyright Exceptions*". IPO, United Kingdom. Available at: www.ipo.gov.uk/consult-gowers2.pdf
[43] Ibid.

The argument is that since South Africa has a net deficit of copyright royalty which flows out of the country, the country may benefit from free riding on the innovative activities of the rest of the world. Australia for example has argued that the country should not extend copyright protection beyond the limits demanded by the international treaties obligations because of the net costs of such protection[44].

The maintenance of the existing standards were based on the fact that any reduction in the scope beyond the minimum standards provided in Berne and TRIPs would entail costs to reciprocal treatment of Australian copyright producers under those conventions and the generally good reputation that Australia has as a responsible member of the international community of nations.

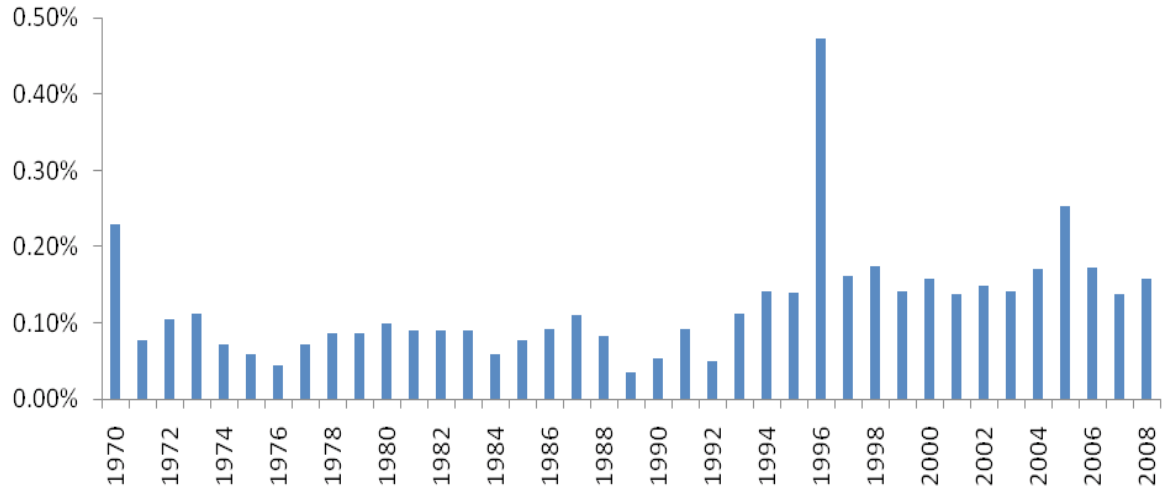
It was also argued that such changes may have labour market implications for copyright industries as they can move their operations abroad where the conditions may be more favourable.

While we present evidence of the South African trade in copyright materials we would like to emphasise that the argument at stake is the benefits and costs of protectionism versus free trade which TRIPs and WIPO have been so concerned to promote. Richardson *et al.* (2000)[45] argue that the argument reflects the old mercantilist fallacy that exports are good and imports are bad. The argument has been attacked by Adam Smith in his Wealth of Nations[46] (1776). "What Smith showed is that mercantilism provides a vehicle for subsidising the inefficient efforts of local producers, who seek to prevent competition from cheaper imports to the ultimate detriment of consumers. Economists have accepted for over 200 years that mercantilism is a fallacy when applied to industries such as textiles, shoes and meat. The logical and rational position with respect to copyright industries is exactly the same" (Richardson *et al.*, 2000)[47].

Trade in copyright consists of two components. The first component is part of the merchandise trade and includes trade in commodities such as books, newspapers, periodicals, sound recordings and other recorded tapes and disks passing through merchandise trade. The second component is made up of licence fees and royalties paid for the use of products such as computer and information services, software, films, TV programmes and sound recordings. These royalties are included in trade in services in the balance of payments.

Figures 22 and 23 show the shares of imported and exported traded copyright material in the total imports and exports of the country for the period 1970 to 2008.

Figure 22: South Africa Printing, Publishing and Recorded Media Exports: Share to Total Exports



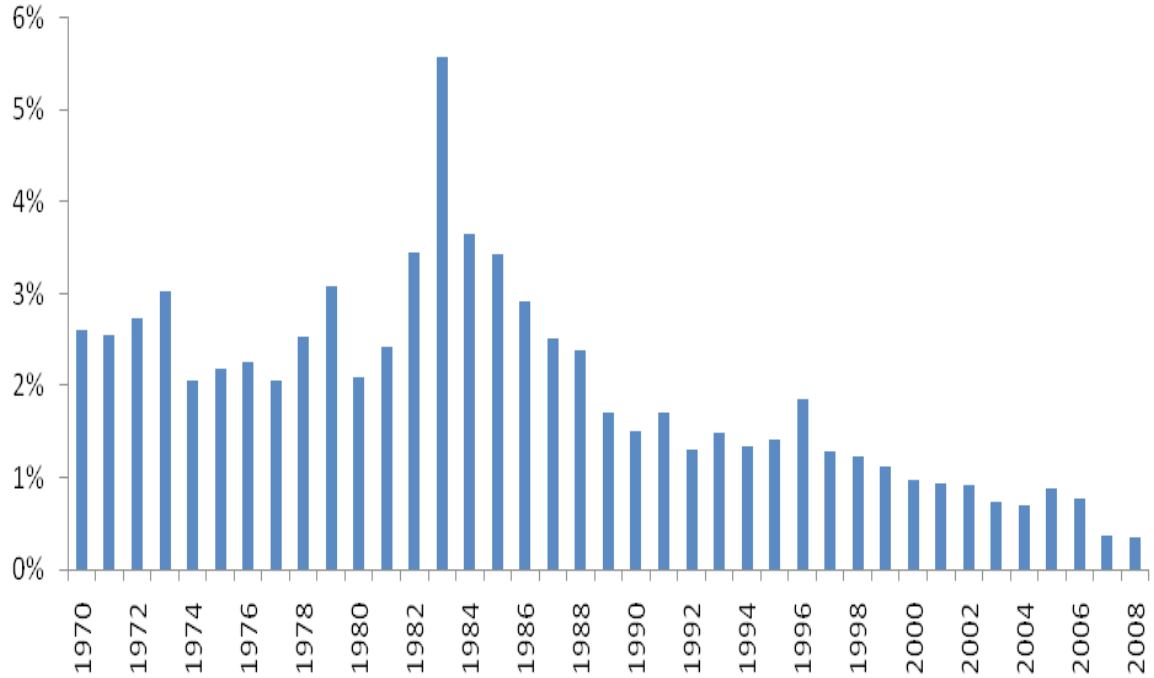
Source: Authors' calculations with data from the South African Reserve Bank (SARB), the South African Revenue Service (SARS) and Quantec databases.

[44] ORR (1995) "*An Economic Analysis of Copyright Reform*" (submission to the copyright law review committee's review of the copyright act 1968) Office of Regulation Review, Australia.
[45] Richardson M., Gans J., Hanks F. and Williams P. (2000) "*The Benefits and Costs of Copyright: An Economic Perspective*" Centre for Copyright Studies Ltd, Discussion Paper, Australia.
[46] Smith A. (1776) "*An Inquiry into the Nature and Causes of the Wealth of Nations*", as quoted in Richardson et al. (2000)
[47] See footnote 39.

The share of 'printing, publishing and recorded media' exports was 0.158% during 2008 while their share of imports has been reduced from more than 5% in the 1980s to 0.351% in 2008.

The South African share of 'printing, publishing and recorded media' exports (0.15%) is lower than the average in Europe (table 10), while the share of imports (0.35) is just below those appearing in table 10.

Figure 23: South Africa Printing, Publishing and Recorded Media Imports: Share to Total Imports



Source: Authors' calculations with data from the South African Reserve Bank (SARB), the South African Revenue Service (SARS) and Quantec databases.

Table 10: Trade in Copyright Dependent Goods

	Share of copyright material in merchandise exports (%)	Share of copyright material in merchandise imports (%)
Australia 1996 to 1997	0.5	2.2
EU-12	0.8	0.7
Belgium – Luxembourg	0.5	0.8
Denmark	0.9	0.8
Germany	0.8	0.7
Greece	0.2	0.5
Spain	0.6	0.6
France	0.6	0.8
Ireland	4.9	1.0
Italy	0.4	0.5
the Netherlands	1.0	0.9
Portugal	0.2	0.6
the UK	1.1	0.9
the EFTA	0.4	1.1
the USA	1.1	0.5
Japan	0.8	0.4

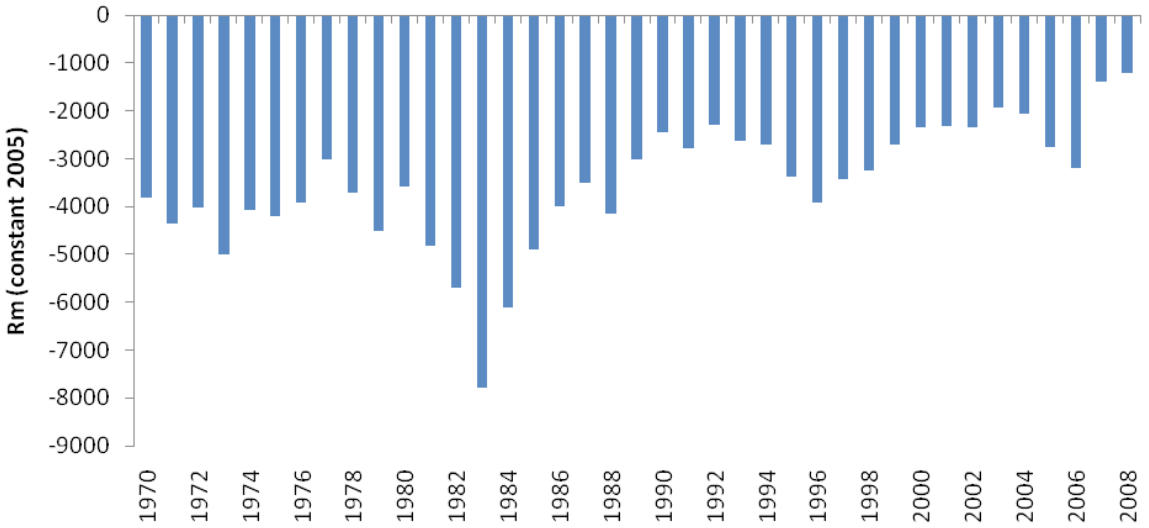
Table 10: Trade in Copyright Dependent Goods (Continued)

Korea (South)	1.3	0.2
Brazil	0.1	0.7
India	0.1	0.4

Source: Revesz (1999)[48]

Figure 24 shows the trade balance of the 'printing, publishing and recorded media' industry in South Africa. The trade balance has been reduced from just below ZAR8 billion in the 1980s to just above ZAR1 billion in 2008, in 2005 values.

Figure 24: Trade Balance: South Africa Printing, Publishing and Recorded Media 1970 to 2008



Source: Authors' calculations with data from the South African Reserve Bank (SARB), the South African Revenue Service (SARS) and Quantec databases.

Trade in copyright services statistics (the second component of trade in copyright) is not available in South Africa. In order to have an estimate we assume that 50% of receipts and payments registered under royalties and licence fees and 10% of those under 'architectural, engineering and other technical services' are copyright related. Table 11 shows the payments and receipts in copyright services.

[48] Revesz J. (1999) "*Trade Related Aspects of Intellectual Property Rights*" Productivity Commission Staff Research Paper, AGPS, Canberra.

Table 11: Payments and Receipts in Copyright Services

Year	Payments (ZAR million current)	Receipts (ZAR million current)	Balance (ZAR million current)
2000	115.70	75.80	-39.90
2001	138.00	80.00	-58.00
2002	184.40	88.20	-96.20
2003	180.00	90.80	-89.20
2004	202.00	98.40	-103.60
2005	293.80	115.60	-178.20
2006	604.10	104.30	-499.80
2007	688.00	186.70	-501.30
2008	815.10	271.35	-543.75

Source: The Reserve Bank –personal communication.

The sum of the balances in copyright services and in merchandise trade shows the total effect of copyright in the country's imports and exports. It becomes apparent that the size of deficits both in the trade and the balance of payments in South Africa are much smaller than those in other countries and hence the issue of deficits does not warrant further discussion.

6.2 Recommendations

During the process of our investigation a number of questions were raised which lead to a number of recommendations.

From a methodological prospective WIPO's guidelines[49] identify the industries affected by copyright and suggest certain copyright coefficients. The coefficients reflect the copyright components within particular industries and hence the percentage of value-added that should be allocated to copyright contribution. The guide states: "For architecture, for example, various studies take between 65% and 75% of the architectural industry as having a copyright component"[50]. Further the guide suggests that "an approximate average of the contribution of the non-core groups, based on the results from the past studies, would indicate that this contribution is around 30% of the entire contribution of all copyright-based industries"[51]. The guide concludes that "the procedure of establishing the weightings would combine several approaches or techniques…"[52]. As the copyright coefficients may change over time and may differ from country to country we suggest that WIPO considers developing guidelines for the estimation of copyright coefficients.

WIPO's interest in promoting the copyright industries is currently focused in the measurement of the relevant impact on the economy. However, the impact of the copyright-based industries is dependent mainly on the structure of the economy and the importance/incentives provided for the development and growth of the relevant clusters. We suggest that WIPO should identify international best practice in the promotion of copyright-based industries and disseminate the information to member states.

The South African authorities provide limited information related to copyright industries. As a result the copyright-based industries are not in the radar of the policy-makers. Furthermore, the lack of relevant information impedes the country's limited research expertise in investigating the relevant economic clusters. We suggest that the Department of Trade and Industry (DTI) and the Department of Arts and Culture (DAC) request from Statistics SA and the Reserve Bank to separate the statistics related to copyright-based industries and publish them regularly.

[49] WIPO (2003) "*Guide on Surveying the Economic Contribution of the Copyright-Based Industry*". World Intellectual Property Organization, Geneva.
[50] Ibid. p.34.
[51] Ibid. p.59.
[52] Ibid. p.59.

The South African copyright regime does not include exceptions and limitations for the visually impaired or for the benefit of people with any other disability (e.g. dyslexics) as well as for technological protection measures (such as encryption of the protected material) and electronic rights management information (such as digital identifiers). Furthermore, despite the existence of exceptions for purposes of illustration, for teaching and research, the legal uncertainty surrounding the use of works has led to the conclusion of agreements between the collecting societies and educational establishments to the financial detriment of the latter. As exceptions have the potentials to create value (Gowers Review, 2006)[53] we suggest that DTI should review the Copyright Act in order to introduce limitations in accordance with the Berne Convention three steps test (article 9(2)) and with the fair use provision and to clarify clauses as necessary.

The DTI should develop a research programme supporting researcher initiated projects related to IPR in general and copyright in particular. This programme will provide continuous research and intelligence supporting the needs of the DTI related to IPRs and simultaneously will develop relevant expertise in the country. The National Research Foundation may undertake to implement such a programme on the instructions of the DTI.

[53] Gowers Review (2006). "*Gowers Review of Intellectual Property*". HMSO, Norwich, NR3 1BQ.

Appendix 1

Table 12: Highest and Lower Piracy Rates Internationally

Highest Piracy		Lowest Piracy	
Georgia	95%	United States	20%
Bangladesh	92%	Japan	21%
Armenia	92%	Luxembourg	21%
Zimbabwe	92%	New Zealand	22%
Sri Lanka	90%	Austria	24%
Azerbaijan	90%	Belgium	25%
Moldova	90%	Denmark	25%
Yemen	89%	Sweden	25%
Libya	87%	Switzerland	25%
Pakistan	86%	Australia	26%
Venezuela	86%	Finland	26%
Indonesia	85%	Germany	27%
Vietnam	85%	United Kingdom	27%
Iraq	85%	Netherlands	28%
Ukraine	84%	Norway	28%
Algeria	84%	Israel	32%
Montenegro	83%	Canada	32%
Paraguay	83%	Ireland	34%
Cameroon	83%	South Africa	35%
Nigeria	83%	Singapore	36%
Zambia	82%	UAE	36%
Bolivia	81%	Czech Republic	38%
Guatemala	81%	Taiwan	39%
China	80%	Réunion	40%
El Salvador	80%	France	41%

Source: BSA-IDC 2009[54]

[54] BSA-IDC 2009 "*Sixth Annual BSA-IDC Global Software: 08 Piracy Study*" Business Software Alliance http://global.bsa.org/globalpiracy2008/studies/globalpiracy2008.pdf

Appendix 2 International Studies Data

The sources of the international data are the following:

- World Intellectual Property Organization (WIPO), 2006, *National Studies on Assessing the Economic Contribution of the Copyright-Based Industries No. 1: The economic contribution of copyright-based industries in Singapore 2004*. WIPO: Switzerland.
- World Intellectual Property Organization (WIPO), 2006, *National Studies on Assessing the Economic Contribution of the Copyright-Based Industries No. 1: The economic contribution of copyright-based industries in Canada 2004*. WIPO: Switzerland.
- World Intellectual Property Organization (WIPO), 2006, *National Studies on Assessing the Economic Contribution of the Copyright-Based Industries No. 1: The economic contribution of copyright-based industries in Latvia 2000*. WIPO: Switzerland.
- World Intellectual Property Organization (WIPO), 2006, *National Studies on Assessing the Economic Contribution of the Copyright-Based Industries No. 1: The economic contribution of copyright-based industries in Hungary 2005*. WIPO: Switzerland.
- World Intellectual Property Organization (WIPO), 2008, *National Studies on Assessing the Economic Contribution of the Copyright-Based Industries No. 2: The economic contribution of copyright-based industries in the Philippines*. WIPO: Switzerland.
- World Intellectual Property Organization (WIPO), 2008, *National Studies on Assessing the Economic Contribution of the Copyright-Based Industries No. 2: The economic contribution of copyright-based industries in Mexico 2006*. WIPO: Switzerland.
- World Intellectual Property Organization (WIPO), 2008, *National Studies on Assessing the Economic Contribution of the Copyright-Based Industries No. 2: The economic contribution of copyright-based industries in Jamaica 2007*. WIPO: Switzerland.
- World Intellectual Property Organization (WIPO), 2008, *National Studies on Assessing the Economic Contribution of the Copyright-Based Industries No. 2: The economic contribution of copyright-based industries in Bulgaria 2007*. WIPO: Switzerland.

Table 13: Summary of Selected Studies: Contribution of the Core Copyright-Based Industries

Country (Year)	Singapore (2001)		the Philippines (2003)		Hungary (2002)		Mexico (2003)	
	% of GDP	% of employment	% of GDP	% of employment	% of GDP	% of employment	% of GDP	% of employment
Press and Literature	0.94%	1.16%	5.17%	6.22%	1.45%	1.56%	0.86%	1.22%
Music Theatrical Productions Operas	0.20%	0.49%	0.96%	0.81%	0.42%	0.64%	0.26%	0.38%
Motion Picture and Video	0.05%	0.10%	0.18%	0.11%	0.19%	0.16%	0.12%	0.28%
Radio and Television	0.15%	0.27%	1.11%	0.45%	0.50%	0.23%	0.74%	0.33%
Photography	0.03%	0.08%	0.01%	0.04%	0.05%	0.09%	0.05%	0.17%
Software and Databases	1.22%	1.13%	0.93%	0.97%	0.98%	1.16%	0.26%	0.44%
Visual and Graphic Arts	0.06%	0.13%	0.00%	0.00%			0.08%	0.16%
Advertising Services Agencies, Buying Services	0.20%	0.27%	0.24%	0.23%	0.29%	0.31%	0.25%	0.41%
Copyright Collecting Societies	0.01%	0.01%			0.07%	0.00%	0.00%	0.00%
Core Copyright Industries	**2.85%**	**3.64%**	**8.59%**	**8.81%**	**3.95%**	**4.15%**	**2.62%**	**3.40%**
Country (Year)	**Jamaica (2005)**		**Bulgaria (2005)**		**Lebanon (2005)**		**Latvia (2000)**	
Press and Literature	0.51%	0.61%	0.52%	1.03%	0.75%	0.83%	1.40%	1.70%
Music Theatrical Productions Operas	0.21%	0.27%	0.04%	0.05%	0.33%	0.22%	0.00%	0.10%
Motion Picture and Video	0.03%	0.05%	0.10%	0.09%	0.29%	0.25%	0.00%	0.30%
Radio and Television	0.59%	0.48%	0.19%	0.14%	0.34%	0.35%	0.10%	0.90%
Photography	0.09%	0.12%	0.02%	0.08%	0.04%	0.04%		
Software and Databases	0.11%	0.12%	0.51%	0.49%	0.39%	0.22%	0.60%	0.40%
Visual and Graphic Arts	0.05%	0.05%	0.01%	0.04%	0.23%	0.13%		
Advertising Services Agencies, Buying Services	0.12%	0.11%	0.16%	0.38%	0.15%	0.07%	0.80%	0.30%
Copyright Collecting Societies	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%		
Core Copyright Industries	**1.71%**	**1.80%**	**1.57%**	**2.30%**	**2.52%**	**2.11%**	**2.90%**	**3.70%**

Source: Data derived from the World Intellectual Property Organization (WIPO), 2006 and 2008[55]

[55] See footnotes 25 and 26.

Table 14: Summary of Selected Studies: Contribution of Interdependent Copyright-Based Industries

Country (Year)	Singapore (2001)		the Philippines (2003)		Hungary (2002)		Mexico (2003)	
	% of GDP	% of employment	% of GDP	% of employment	% of GDP	% of employment	% of GDP	% of employment
TV sets, Radios, VCRs and DVD Players	0.27%	0.26%	0.38%	0.20%	0.62%	0.67%	0.99%	1.09%
Computers and Equipment	1.32%	0.78%	0.52%	0.42%	0.20%	0.43%	0.90%	0.72%
Musical Instruments	0.01%	0.01%	0.00%	0.01%	0.01%	0.02%	0.03%	0.05%
Photographic and Cinematographic Instruments	0.07%	0.08%	0.05%	0.09%	0.02%	0.02%	0.17%	0.10%
Photocopiers	0.07%	0.06%			0.01%	0.01%	0.07%	0.31%
Blank Recording Material	0.01%	0.01%			0.01%	0.01%	0.06%	0.03%
Paper	0.03%	0.04%			0.11%	0.10%	0.64%	1.35%
Other			1.37%	0.72%	0.14%			
Interdependent Copyright industries	**1.76%**	**1.24%**	**2.32%**	**1.44%**	**1.25%**	**1.25%**	**2.86%**	**3.65%**
Country (Year)	**Jamaica (2005)**		**Bulgaria (2005)**		**Lebanon (2005)**		**Latvia (2000)**	
TV sets, Radios, VCRs and DVD Players	0.00%	0.01%	0.11%	0.19%	0.01%	0.02%	0.00%	0.00%
Computers and Equipment	0.02%		0.19%	0.21%	0.01%	0.04%	0.20%	0.00%
Musical Instruments		0.31%	0.01%	0.01%	0.00%	0.00%		
Photographic and Cinematographic Instruments	0.01%		0.02%	0.05%	0.00%	0.01%	0.50%	0.60%
Photocopiers								
Blank Recording Material			0.05%	0.01%				
Paper	0.02%		0.25%	0.27%	0.00%	0.01%		
Other	0.70%	0.29%			0.67%	0.65%	0.40%	0.10%
Interdependent Copyright industries	**0.74%**	**0.31%**	**0.63%**	**0.73%**	**0.71%**	**0.73%**	**1.10%**	**0.70%**

Source: Data derived from the World Intellectual Property Organization (WIPO), 2006 and 2008[56]

[56]See footnotes 25 and 26.

Table 15: Summary of Selected Studies: Contribution of Partial Copyright-Based Industries

Country (Year)	Singapore (2001)		the Philippines (2003)		Hungary (2002)		Mexico (2003)	
	% of GDP	% of employment	% of GDP	% of employment	% of GDP	% of employment	% of GDP	% of employment
Apparel, textiles and footwear	0.00%	0.01%	0.01%	0.03%	0.03%	0.07%	0.00%	0.72%
Jewellery and coins	0.02%	0.03%	0.01%	0.02%	0.01%	0.02%	0.03%	0.06%
Other crafts	0.01%	0.04%			0.07%	0.14%	0.01%	0.04%
Furniture	0.02%	0.03%	0.04%	0.10%	0.02%	0.04%	0.02%	0.04%
Household goods, china and glass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.44%	0.72%
Wall coverings and carpets	0.00%	0.00%			0.00%	0.00%	0.00%	0.01%
Toys and games	0.01%	0.03%	0.02%	0.06%	0.01%	0.04%	0.07%	0.15%
Architecture, engineering and surveying	0.02%	0.03%	0.00%	0.00%	0.23%	0.24%	0.54%	0.80%
Interior design	0.01%	0.01%						
Other			0.01%	0.01%	0.08%	0.07%	0.00%	0.01%
Partial copyright industries	0.09%	0.18%	0.09%	0.22%	0.45%	0.62%	1.11%	2.53%
Country (Year)	Jamaica (2005)		Bulgaria (2005)		Lebanon (2005)		Latvia (2000)	
Apparel, textiles and footwear	0.00%	0.00%	0.01%	0.05%	0.02%	0.03%	2.15%	4.27%
Jewellery and coins	0.01%	0.00%	0.00%	0.01%	0.12%	0.04%		
Other crafts			0.01%	0.03%				0.79%
Furniture	0.02%	0.01%	0.02%	0.06%	0.02%	0.03%	0.53%	
Household goods, china and glass	0.00%	0.00%	0.00%	0.01%	0.01%	0.02%		
Wall coverings and carpets			0.00%	0.00%	0.00%	0.00%		
Toys and games			0.01%	0.04%	0.00%	0.01%	0.05%	0.08%
Architecture, engineering and surveying	0.12%	0.07%	0.04%	0.07%	0.27%	0.26%		
Interior design	0.00%	0.00%						
Other	0.33%	0.15%	0.00%	0.01%	0.18%	0.31%	0.08%	0.15%
Partial copyright industries	0.49%	0.24%	0.09%	0.28%	0.62%	0.70%	2.81%	5.29%

Source: Data derived from the World Intellectual Property Organization (WIPO), 2006 and 2008[57]

[57] See footnotes 25 and 26.

Table 16: Summary of Selected Studies: Contribution of Non-Dedicated Support Copyright-Based Industries

Country (Year)	Singapore (2001)		the Philippines (2003)		Hungary (2002)		Mexico (2003)	
	% of GDP	% of employment	% of GDP	% of employment	% of GDP	% of employment	% of GDP	% of employment
General wholesale and retail	0.34%	0.37%	0.18%	0.25%	0.56%	0.63%	0.50%	1.05%
General transportation	0.48%	0.33%	0.20%	0.29%	0.45%	0.45%	0.32%	0.31%
Telephony and internet	0.14%	0.04%	0.32%	0.09%			0.33%	0.05%
Non-dedicated support copyright industries	0.97%	0.74%	0.70%	0.63%	1.01%	1.08%	1.15%	1.41%
Country (Year)	**Jamaica (2005)**		**Bulgaria (2005)**		**Lebanon (2005)**		**Latvia (2000)**	
General wholesale and retail	1.20%	0.35%	0.07%	0.22%	0.60%	0.72%	0.41%	0.53%
General transportation	0.70%	0.34%	0.10%	0.16%	0.30%	0.22%	0.37%	0.23%
Telephony and internet			0.10%	0.01%				0.73%
Non-dedicated support copyright industries	1.90%	0.68%	0.09%	0.28%	0.90%	0.94%	0.77%	1.48%

Source: Data derived from the World Intellectual Property Organization (WIPO), 2006 and 2008[58]

Table 17: International Studies: Copyright Factors

		Lebanon	Jamaica	the Philippines	Singapore	Hungary
Core	Press and Literature	1.000	1.000	1.000	1.000	1.000
	Music Theatrical Productions Operas	1.000	1.000	1.000	1.000	1.000
	Radio and Television	1.000	1.000	1.000	1.000	1.000
	Photography	1.000	1.000	1.000	1.000	1.000
	Software and Databases	1.000	1.000	1.000	1.000	1.000
	Visual and Graphic Arts	1.000	1.000	1.000	1.000	1.000
	Advertising Services	1.000	1.000	1.000	1.000	1.000
	Copyright Collecting Societies	1.000	1.000	1.000	1.000	1.000
	Motion Picture and Video	1.000	1.000	1.000	1.000	1.000
Interdependent	TV sets, Radios, VCRs, CD Players, DVD Players, Cassette Players, Electronic Game Equipment, Other Similar Equipment	1.000	1.000	0.350	0.350	1.000
	Computers and Equipment	1.000	1.000	0.350	0.350	1.000
	Musical Instruments	1.000	1.000	0.200	0.200	1.000
	Photographic and Cinematographic Instruments	1.000	1.000	0.300	0.300	1.000
	Photocopiers	1.000	1.000	0.300	0.300	1.000
	Blank Recording Material	1.000	1.000	0.250	0.250	1.000
	Paper	1.000	1.000	0.250	0.250	1.000

[58]See footnotes 25 and 26.

Table 17: International Studies: Copyright Factors (Continued)

		Lebanon	Jamaica	the Philippines	Singapore	Hungary
Partial	Apparel, textiles and footwear	0.020	0.005	0.004	0.000	0.005
	Jewellery and coins	0.250	0.005	0.083/0.42	0.083/0.42	0.250
	Other crafts			0.420	0.420	0.400
	Furniture	0.050	0.050	0.002	0.083/0.017	0.050
	Household goods, china and glass	0.025	0.005	0.006	0.001	0.005
	Wall coverings and carpets	0.025	0.020	0.002	0.002	0.020
	Toys and games	0.500	0.500	0.420	0.420	0.500
	Architecture, engineering and surveying	0.100			0.008	0.100
	Interior design		0.020		0.008	
	Museums	0.500	0.500			0.500
Non-dedicated support	General wholesale and retailing	0.038	0.057	0.057	0.057	0.057
	General transportation	0.041	0.057	0.057	0.057	0.057
	Telephony and internet		0.057	0.057	0.057	

Source: Data derived from the World Intellectual Property Organization (WIPO), 2006 and 2008

Appendix 3 Classification of Industries

The categories of the industries were provided by Statistics SA and the classification is according to the Standard Industrial Classification of all economic activities (SIC). The SIC is a classification of economic activities of industries. An industry consists of establishments engaged in the same or a closely related kind of economic activity based mainly on the principal class of goods produced or services rendered. The term "industry" is used in the widest sense to cover all economic activity from the primary industries of agriculture, forestry, fishing and mining to the rendering of social, recreational, cultural and personal services.

Table 18: Categories of Core Copyright-Based Industries

Core Copyright Industries	
1	**3 Manufacturing: Printing, Publishing and Recorded Media**
	324 Publishing
	3241 Publishing of books, brochures, musical books and other publications
	3242 Publishing of newspapers, journals and periodicals
	3243 Publishing of recorded media
	3249 Other publishing
	3251 Printing
	3252 Service activities related to printing
	3260 Reproduction of recorded media
2	**Film and Television Industry**
3	**8 Financial Intermediation, Insurance, Real Estate And Business Services: Photography/Software and Databases/ Advertising**
	831 Activities auxiliary to financial intermediation, except insurance and pension funding
	8311 Administration of financial markets
	8312 Security dealing activities
	8319 Activities auxiliary to financial intermediation n.e.c.59
	8320 Activities auxiliary to insurance and pension funding
	841 Real estate activities with own or rented property
	842 Real estate activities on a fee or contract basis
	8511 Renting of land transport equipment
	8512 Renting of water transport equipment
	8513 Renting of air transport equipment
	8521 Renting of agricultural machinery and equipment
	8522 Renting of construction and civil engineering machinery and equipment
	8523 Renting of office machinery and equipment (including computers)
	8529 Renting of other machinery and equipment n.e.c.36
	8530 Renting of personal and household goods n.e.c. 36
	8610 Hardware consultancy
	8620 Software consultancy and supply
	8630 Data processing
	8640 Data base activities
	8650 Maintenance and repair of office, accounting and computing machinery
	8690 Other computer related activities

[59] n.e.c.=not elsewhere classified.

Table 18: Categories of Core Copyright-Based Industries (Continued)

	87 Research and development
	871 Research and experimental development on natural sciences and engineering
	8720 Research and experimental development on social sciences and humanities
	8811 Legal activities
	8812 Accounting, book-keeping and auditing activities; tax consultancy
	8813 Marketing research and public opinion polling
	8814 Business and management consultancy activities
	8821 Architectural and engineering activities and related technical consultancy
	8822 Technical testing and analysis
	883 Advertising
	8891 Labour recruitment and provision of personnel
	8892 Investigation and security activities
	8893 Building and industrial plant cleaning activities
	8894 Photographic activities
	8895 Packaging activities
	8899 Other business activities n.e.c. 36
4	**Copyright Collecting Societies**

Source: Statistics South Africa (Stats SA).

Table 19: Categories of Interdependent Copyright-Based Industries

Interdependent Copyright Industries	
1	**3 Manufacturing: Television, Radio and Communication Equipment**
	3710 Manufacture of electronic valves, tubes and other electronic components
	3720 Manufacture of television, radio transmitters and apparatus for line telephony and line telegraphy
	3730 Manufacture of television and radio receivers, sound or video recording or reproducing apparatus and associated goods
2	**3 Manufacturing: Computers and equipment/ photocopiers**
	3561 Manufacture of engines and turbines, except aircraft, vehicle and motor cycle engines
	3562 Manufacture of pumps, compressors, taps and valves
	3563 Manufacture of bearings, gears, gearing and driving elements
	3564 Manufacture of ovens, furnaces and furnace burners
	3565 Manufacture of lifting and handling equipment
	3569 Manufacture of other general purpose machinery
	3571 Manufacture of agricultural and forestry machinery
	3572 Manufacture of machine-tools
	3573 Manufacture of machinery for metallurgy
	3574 Manufacture of machinery for mining, quarrying and construction
	3575 Manufacture of machinery for food, beverage and tobacco processing
	3576 Manufacture of machinery for textile, apparel and leather production
	3577 Manufacture of weapons and ammunition
	3579 Manufacture of other special purpose machinery
	3580 Manufacture of household appliances n.e.c. 36
	3590 Manufacture of office, accounting and computing machinery

Table 19: Categories of Interdependent Copyright-Based Industries (Continued)

3	**3 Manufacturing: Paper and Paper Products**
	3231 Manufacture of pulp, paper and paper board
	3232 Manufacture of corrugated paper and paper board and of containers of paper and paper board
	3239 Manufacture of other articles of paper and paper board

Source: Statistics South Africa (Stats SA).

Table 20: Categories of Partial Copyright-Based Industries

Partial Copyright Industries	
1	**3 Manufacturing: Apparel, textiles and footwear**
	Wearing apparel
	3130 Manufacture of knitted and crocheted fabrics and articles
	3140 Manufacture of wearing apparel, except fur apparel
	3150 Dressing and dyeing of fur; manufacture of articles of fur
	Textiles
	3111 Preparation and spinning of textile fibres, weaving of textiles
	3112 Finishing of textiles
	3121 Manufacture of made-up textile articles, except apparel
	3122 Manufacture of carpets, rugs and mats
	3123 Manufacture of cordage, rope, twine and netting
	3129 Manufacture of other textiles n.e.c. 36
	Footwear
2	**3 Manufacturing: Furniture and other manufacturing**
	3910 Manufacture of furniture
	3921 Manufacture of jewellery and related articles
	3922 Manufacture of musical instruments
	3923 Manufacture of sports goods
	3924 Manufacture of games and toys
	3929 Other manufacturing n.e.c. 36
	3951 Recycling of metal waste and scrap n.e.c. 36
	3952 Recycling of non-metal waste and scrap n.e.c36.
3	**Crafts**
4	**Glass and glass products**

Source: Statistics South Africa (Stats SA).

Table 21: Categories of Non-Dedicated Copyright-Based Industries

	Non-dedicated Copyright Industries
1	**6 Wholesale and Retail Trade, Repair of Motor Vehicles, Motor Cycles and Personal and Household Goods, Hotels and Restaurants, General wholesale and retailing**
	61: Wholesale trade and commission trade, except of motor vehicles and motor cycles
	6110 Wholesale trade on a fee or contract basis
	6121 Wholesale trade in agricultural raw materials and livestock
	6122 Wholesale trade in food, beverages and tobacco
	61221 Wholesale trade in foodstuffs
	61222 Wholesale trade in beverages
	61223 Wholesale trade in tobacco products
	6131 Wholesale trade in textiles, clothing and footwear
	6139 Wholesale trade in other household goods
	61391 Wholesale trade in household furniture, requisites and appliances
	61392 Wholesale trade in books and stationery
	61393 Wholesale trade in precious stones, jewellery and silverware
	61394 Wholesale of pharmaceuticals and toiletries
	61399 Wholesale trade in other household goods n.e.c. 36
	6141 Wholesale trade in solid, liquid and gaseous fuels and related products
	6142 Wholesale trade in metals and metal ores
	6143 Wholesale trade in construction materials, hardware, plumbing and heating equipment and supplies
	6149 Wholesale trade in other intermediate products, waste and scrap
	61501 Office machinery and equipment, including computers
	61509 Other machinery
	61901 General wholesale trade
	61909 Other wholesale trade n.e.c. 36
	62: Retail trade, except of motor vehicles and motor cycles, repair of personal and household goods
	6211 Retail trade in non-specialised stores with food, beverages and tobacco predominating
	6219 Other retail trade in non-specialised stores
	62201 Retail trade in fresh fruit and vegetables
	62202 Retail trade in meat and meat products
	62203 Retail trade in bakery products
	62204 Retail trade in beverages (bottle stores)
	62209 Other retail trade in food, beverage and tobacco n.e.c36
	623 Other retail trade in new goods in specialised stores
	6231 Retail trade in pharmaceutical and medical goods, cosmetic and toilet articles
	6232 Retail trade in textiles, clothing, footwear and leather goods
	62321 Retail trade in men's and boys' clothing
	62322 Retail trade in ladies' and girls' clothing
	62323 Retail trade by general outfitters and by dealers in piece goods, textiles, leather and travel accessories

Table 21: Categories of Non-Dedicated Copyright-Based Industries (Continued)

Non-dedicated Copyright Industries (continued)	
	62324 Retail trade in shoes
	6233 Retail trade in household furniture, appliances, articles and equipment
	6234 Retail trade in hardware, paint and glass
	62391 Retail trade of reading matter and stationery
	62392 Retail trade in jewellery, watches and clocks
	62393 Retail trade in sports goods and entertainment requisite
	62399 Retail trade by other specialised stores
	6240 Retail trade in second-hand goods in stores
	6251 Retail trade via mail order houses
	6252 Retail trade via stalls and markets
	6259 Other retail trade not in store
	6260 Repair of personal and household goods
	63: Sale, maintenance and repair of motor vehicles and motor cycles, retail trade in automotive fuel
	631 Sale of motor vehicles
	6320 Maintenance and repair of motor vehicles
	633 Sale of motor vehicle parts and accessories
	6340 Sale, maintenance and repair of motor cycles and related parts and accessories
	6350 Retail sale of automotive fuel
2	**7: Transport, storage and communication**
	7111 Railway transport
	712 Other land transport
	7121 Other scheduled passenger land transport
	7122 Other non-scheduled passenger land transport
	7123 Freight transport by road
	7130 Transport via pipelines
	72 Water transport
	7211 Sea and coastal water transport
	7220 Inland water transport
	7300 Air transport
	7411 Cargo handling
	7412 Storage and warehousing
	7413 Other supporting transport activities
	7414 Travel agency and related activities
	7419 Activities of other transport agencies
	7511 National postal activities
	7512 Courier activities other than national postal activities
	7520 Telecommunications

Source: Statistics South Africa (Stats SA).

Appendix 4 Input-Output Multipliers

The Input-Output analysis is credited to W. Leontief (1905-1999) [Nobel Prize laureate 1973] who developed the first Input-Output (IO) table[60]. In the literature, the first studies on applications of Leontief's analysis were conducted during the 1950s and 1960s[61, 62]. However, the IO analysis has been even now preferred in the international literature in the 1980s, 1990s and 2000s with specific interest on the impact of environmental changes to the economies[63, 64, 65, 66].

Input-Output analysis is a way of systematically quantifying the mutual interrelationships among the various sectors of the economic system. The idea of this analysis lies with the fact that it is impossible to analyse the sectoral contribution of a specific production sector (industry) to overall aggregate production without taking into account its connection with the other sectors.

The IO tables are used for several analytical purposes such as:

- economic policy
- forecasts
- analysis of the production structure
- production functions

The IO tables are organised in a basic matrix showing the inputs and outputs of the various economic sectors. This representation of the economy is based on specific assumptions. For example all the transactions are reflected in monetary terms and recorded on the assumption that general equilibrium exists in the economy. Furthermore, only cross-section data are included in the tables, hence, IO tables give us an opportunity for a static-dynamic analysis. Each year recorded in the IO tables gives us a frozen picture of the economy's equilibrium at that particular year (static part of the analysis). The researcher, however, can progress from one equilibrium position to the next (dynamic part of the analysis).

The main application of IO tables is the derivation of multipliers in order to examine the effects on an economy of an exogenous change in final demand. The four most commonly used multipliers are output, income, employment and import. They provide, respectively, a measure of the effects of an exogenous change in final demand on a) the output of industries in the economy b) income earned by households c) employment to be generated and d) usage of imports by all industries.

An IO model relates industry outputs to final demand. In matrix terminology, the model is expressed as X = (I-A)-1*Y, where X is the column vector of industry outputs, Y the column vector of final demand, I the identity matrix and A the direct requirements coefficients matrix. (I-A)-1 is the "open" (all final demand sectors are assumed to be exogenous) Leontief inverse, usually referred to as the total requirements coefficients matrix. The multipliers derived from an open IO model are known as simple multipliers. The household sector receives income for its involvement in the production process and spends it on products. This will influence the domestic consumption and consequently the level of output of each domestic industry. Due to this, the household sector is preferred to be treated as endogenous. Therefore, with an expansion of matrix A, we close the matrix with respect to households. The multipliers derived from this new matrix are called total multipliers.

[60] Leontief W. (1953) "*Studies on the structure of the American economy*", New York: Oxford University Press.
[61] Adams A. and Stewart I. (1956) "*Input-Output analysis: An application*", The Economic Journal, 66 (263), 442-454.
[62] Rey G. and Tilanus C. (1963) "*Input-Output Forecasts for the Netherlands, 1949-1958*", Econometrica, 31 (3), 454-463.
[63] Devis K., de Melo J. and Robinson S. (1982) "*General equilibrium models for development policy*", Washington D.C.: The World Bank.
[64] Duchin F. and Steenge A. (1999) "*Input-Output Analysis, technology and the environment*". In J. van den Bergh, Handbook of Environmental and Resource economics. Northampton, USA: Edward Elgar Publishing.
[65] Huppes G., de Koning A., Suti S., Heijungs R., van Oers L., Nielsen P. et al. (2008) "*Environmental Impacts of Consumption in the European Union: High-Resolution Input-Output Tables with Detailed Environmental Extensions*". Journal of Industrial Ecology, 10 (3), 129-146.
[66] Richardson H. (2006) "*Input-Output and Economic Base Multipliers: Looking Backward and Forward*". Journal of Regional Science, 25 (4), 607-661.

A number of other multipliers can also be estimated from the I-O analysis:

- Initial effects: A ZAR1.00 change in output to meet the change of R1.00 in final demand.
- First-round effects: An industry must increase its inputs from other industries and from itself, in order to produce an extra unit of output to meet a ZAR1.00 increase in final demand.
- Industrial support effects: Other industries will need to increase their purchases to expand their output to meet the first-round requirements.
- Production-induced effects: The combination of first-round effects with the industrial-support effects.
- Consumption induced effects: It is equal to its total multiplier less its simple multiplier.
- Type 1A and 1B: They express the simple multiplier as a ratio of the initial effect.
- Type 2A and 2B: They express the total multiplier as a ratio of the initial effect.

Associated with this, there will also be similar effects on household income, employment and imports. The following tables present the multipliers for South Africa derived from the I-O tables for 2009.

Table 22: Output Multipliers 2009

•	Consumption induced effects	First round effects	Industrial support effect	Production induced effect	Consumption induced effects	Simple	Total	Type 1A	Type 1B	Type 2A	Type 2b
Agriculture, forestry and fishing	1.000	0.578	0.863	1.441	1.921	2.441	4.363	1.578	2.441	4.363	3.363
Coal mining	1.000	0.500	0.661	1.161	1.585	2.161	3.747	1.500	2.161	3.747	2.747
Gold and uranium ore mining	1.000	0.295	0.415	0.710	2.782	1.710	4.492	1.295	1.710	4.492	3.492
Other mining	1.000	0.454	0.579	1.034	1.587	2.034	3.620	1.454	2.034	3.620	2.620
Food	1.000	0.786	1.115	1.902	2.251	2.902	5.153	1.786	2.902	5.153	4.153
Beverages	1.000	0.665	0.918	1.584	2.304	2.584	4.888	1.665	2.584	4.888	3.888
Tobacco	1.000	0.633	0.933	1.566	1.697	2.566	4.262	1.633	2.566	4.262	3.262
Textiles	1.000	0.729	1.079	1.808	3.071	2.808	5.879	1.729	2.808	5.879	4.879
Wearing apparel	1.000	0.655	0.930	1.585	3.296	2.585	5.881	1.655	2.585	5.881	4.881
Leather and leather products	1.000	0.747	1.208	1.956	2.795	2.956	5.751	1.747	2.956	5.751	4.751
Footwear	1.000	0.773	1.307	2.080	2.778	3.080	5.857	1.773	3.080	5.857	4.857
Wood and wood products	1.000	0.697	1.004	1.701	2.546	2.701	5.247	1.697	2.701	5.247	4.247
Paper and paper products	1.000	0.778	1.237	2.016	2.495	3.016	5.511	1.778	3.016	5.511	4.511
Printing, publishing and recorded media	1.000	0.690	1.095	1.785	3.110	2.785	5.895	1.690	2.785	5.895	4.895
Coke and refined petroleum products	1.000	0.748	0.839	1.587	1.589	2.587	4.175	1.748	2.587	4.175	3.175
Basic chemicals	1.000	0.780	1.082	1.863	1.927	2.863	4.790	1.780	2.863	4.790	3.790
Other chemicals and man-made fibres	1.000	0.736	1.122	1.857	2.387	2.857	5.245	1.736	2.857	5.245	4.245
Rubber products	1.000	0.777	1.161	1.939	2.367	2.939	5.305	1.777	2.939	5.305	4.305
Plastic products	1.000	0.640	1.000	1.640	3.036	2.640	5.676	1.640	2.640	5.676	4.676
Glass and glass products	1.000	0.652	0.835	1.487	3.076	2.487	5.564	1.652	2.487	5.564	4.564
Non-metallic minerals	1.000	0.659	0.792	1.451	1.820	2.451	4.271	1.659	2.451	4.271	3.271
Basic iron and steel	1.000	0.773	0.947	1.719	2.235	2.719	4.954	1.773	2.719	4.954	3.954
Basic non-ferrous metals	1.000	0.641	0.827	1.468	1.608	2.468	4.076	1.641	2.468	4.076	3.076

Table 22: Output Multipliers 2009 (Continued)

Industry	Initial effects	First round effects	Industrial support effect	Production induced effect	Consumption induced effects	Simple	Total	Type 1A	Type 1B	Type 2A	Type 2b
Metal products excluding machinery	1.000	0.696	1.003	1.699	2.644	2.699	5.344	1.696	2.699	5.344	4.344
Machinery and equipment	1.000	0.693	1.011	1.704	2.797	2.704	5.502	1.693	2.704	5.502	4.502
Electrical machinery and apparatus	1.000	0.733	1.090	1.823	2.684	2.823	5.507	1.733	2.823	5.507	4.507
Television, radio and communication equipment	1.000	0.670	0.965	1.635	2.992	2.635	5.627	1.670	2.635	5.627	4.627
Professional and scientific equipment	1.000	0.717	0.988	1.705	2.348	2.705	5.053	1.717	2.705	5.053	4.053
Motor vehicles, parts and accessories	1.000	0.796	1.321	2.117	2.917	3.117	6.034	1.796	3.117	6.034	5.034
Other transport equipment	1.000	0.684	1.030	1.714	3.203	2.714	5.917	1.684	2.714	5.917	4.917
Furniture	1.000	0.764	1.165	1.929	2.905	2.929	5.834	1.764	2.929	5.834	4.834
Other manufacturing	1.000	0.560	0.670	1.229	1.729	2.229	3.959	1.560	2.229	3.959	2.959
Electricity, gas and steam	1.000	0.465	0.587	1.051	1.973	2.051	4.024	1.465	2.051	4.024	3.024
Water supply	1.000	0.627	0.879	1.506	1.631	2.506	4.138	1.627	2.506	4.138	3.138
Building construction	1.000	0.687	1.089	1.776	2.023	2.776	4.800	1.687	2.776	4.800	3.800
Civil engineering and other construction	1.000	0.657	0.923	1.580	1.987	2.580	4.567	1.657	2.580	4.567	3.567
Wholesale and retail trade	1.000	0.458	0.545	1.003	2.192	2.003	4.195	1.458	2.003	4.195	3.195
Catering and accommodation services	1.000	0.604	0.831	1.435	1.927	2.435	4.362	1.604	2.435	4.362	3.362
Transport and storage	1.000	0.510	0.675	1.185	1.748	2.185	3.933	1.510	2.185	3.933	2.933
Communication	1.000	0.521	0.656	1.177	1.852	2.177	4.029	1.521	2.177	4.029	3.029
Finance and insurance	1.000	0.400	0.383	0.783	2.293	1.783	4.076	1.400	1.783	4.076	3.076
Business services	1.000	0.518	0.608	1.125	1.773	2.125	3.898	1.518	2.125	3.898	2.898
Medical, dental and veterinary services	1.000	0.588	0.770	1.358	2.279	2.358	4.637	1.588	2.358	4.637	3.637
Excluding medical, dental and veterinary services	1.000	0.604	0.782	1.386	1.993	2.386	4.379	1.604	2.386	4.379	3.379
Other producers	1.000	0.215	0.285	0.499	4.442	1.499	5.942	1.215	1.499	5.942	4.942
General government services	1.000	0.357	0.443	0.800	3.589	1.800	5.389	1.357	1.800	5.389	4.389

Source: Authors' calculations with data from the Supply and Use Tables (SUT) of Statistics South Africa (Stats SA).

Table 23: Income Multipliers 2009

Industry	Initial effects	First round effects	Industrial support effect	Production induced effect	Consumption induced effects	Simple	Total	Type 1A	Type 1B	Type 2A	Type 2b
Agriculture, forestry and fishing	0.140	0.089	0.151	0.239	0.244	0.379	0.623	1.634	2.712	4.455	3.455
Coal mining	0.101	0.092	0.119	0.212	0.201	0.313	0.514	1.912	3.095	5.083	4.083
Gold and uranium ore mining	0.410	0.064	0.075	0.139	0.353	0.549	0.902	1.157	1.340	2.201	1.201
Other mining	0.129	0.079	0.104	0.184	0.201	0.313	0.514	1.615	2.422	3.978	2.978
Food	0.113	0.137	0.194	0.331	0.285	0.444	0.729	2.207	3.923	6.445	5.445
Beverages	0.148	0.138	0.168	0.307	0.292	0.455	0.747	1.934	3.072	5.047	4.047
Tobacco	0.066	0.107	0.162	0.269	0.215	0.335	0.550	2.621	5.069	8.326	7.326
Textiles	0.251	0.157	0.198	0.354	0.389	0.606	0.995	1.624	2.410	3.959	2.959
Wearing apparel	0.303	0.168	0.179	0.347	0.418	0.650	1.068	1.555	2.145	3.524	2.524
Leather and leather products	0.207	0.131	0.213	0.344	0.354	0.551	0.906	1.633	2.661	4.371	3.371
Footwear	0.149	0.164	0.235	0.399	0.352	0.548	0.900	2.105	3.686	6.055	5.055
Wood and wood products	0.188	0.134	0.180	0.314	0.323	0.502	0.825	1.713	2.669	4.385	3.385
Paper and paper products	0.138	0.135	0.219	0.355	0.316	0.492	0.809	1.984	3.578	5.876	4.876
Printing, publishing and recorded media	0.276	0.138	0.199	0.337	0.394	0.614	1.008	1.499	2.220	3.646	2.646
Coke and refined petroleum products	0.060	0.104	0.149	0.253	0.201	0.313	0.515	2.722	5.188	8.522	7.522
Basic chemicals	0.080	0.114	0.186	0.300	0.244	0.380	0.625	2.432	4.767	7.831	6.831
Other chemicals and man-made fibres	0.153	0.124	0.195	0.318	0.303	0.471	0.774	1.812	3.088	5.073	4.073
Rubber products	0.129	0.135	0.203	0.338	0.300	0.467	0.767	2.047	3.622	5.949	4.949
Plastic products	0.290	0.130	0.178	0.309	0.385	0.599	0.984	1.449	2.063	3.389	2.389
Glass and glass products	0.299	0.151	0.157	0.308	0.390	0.607	0.997	1.505	2.030	3.334	2.334
Non-metallic minerals	0.107	0.110	0.142	0.252	0.231	0.359	0.590	2.024	3.353	5.507	4.507
Basic iron and steel	0.145	0.127	0.169	0.296	0.283	0.441	0.724	1.875	3.040	4.993	3.993
Basic non-ferrous metals	0.091	0.089	0.137	0.226	0.204	0.317	0.521	1.970	3.477	5.712	4.712
Metal products excluding machinery	0.217	0.129	0.176	0.305	0.335	0.522	0.857	1.595	2.408	3.956	2.956
Machinery and equipment	0.226	0.142	0.184	0.326	0.355	0.552	0.907	1.628	2.444	4.014	3.014

Table 23: Income Multipliers 2009 (Continued)

Industry	Initial effects	First round effects	Industrial support effect	Production induced effect	Consumption induced effects	Simple	Total	Type 1A	Type 1B	Type 2A	Type 2b
Electrical machinery and apparatus	0.200	0.138	0.192	0.330	0.340	0.529	0.870	1.689	2.650	4.353	3.353
Television, radio and communication equipment	0.240	0.160	0.190	0.350	0.379	0.590	0.969	1.666	2.459	4.038	3.038
Professional and scientific equipment	0.142	0.141	0.181	0.321	0.298	0.463	0.761	1.993	3.266	5.366	4.366
Motor vehicles, parts and accessories	0.173	0.157	0.246	0.403	0.370	0.575	0.945	1.908	3.332	5.474	4.474
Other transport equipment	0.274	0.158	0.200	0.358	0.406	0.632	1.038	1.579	2.310	3.794	2.794
Furniture	0.205	0.155	0.213	0.368	0.368	0.573	0.941	1.756	2.792	4.586	3.586
Other manufacturing	0.118	0.103	0.119	0.223	0.219	0.341	0.560	1.872	2.881	4.732	3.732
Electricity, gas and steam	0.208	0.075	0.106	0.181	0.250	0.389	0.639	1.361	1.872	3.074	2.074
Water supply	0.095	0.084	0.143	0.227	0.207	0.322	0.529	1.878	3.380	5.552	4.552
Building construction	0.108	0.103	0.189	0.291	0.257	0.399	0.656	1.953	3.705	6.085	5.085
Civil engineering and other construction	0.122	0.106	0.164	0.270	0.252	0.392	0.644	1.866	3.212	5.276	4.276
Wholesale and retail trade	0.246	0.085	0.102	0.187	0.278	0.432	0.710	1.345	1.759	2.890	1.890
Catering and accommodation services	0.135	0.096	0.150	0.246	0.244	0.380	0.624	1.711	2.826	4.642	3.642
Transport and storage	0.132	0.090	0.122	0.212	0.222	0.345	0.566	1.679	2.603	4.276	3.276
Communication	0.149	0.093	0.123	0.216	0.235	0.365	0.600	1.627	2.450	4.024	3.024
Finance and insurance	0.279	0.096	0.078	0.174	0.291	0.452	0.743	1.343	1.624	2.668	1.668
Business services	0.136	0.100	0.114	0.214	0.225	0.350	0.574	1.737	2.576	4.231	3.231
Medical, dental and veterinary services	0.209	0.100	0.140	0.240	0.289	0.450	0.739	1.479	2.148	3.529	2.529
Excluding medical, dental and veterinary services	0.154	0.095	0.145	0.239	0.253	0.393	0.646	1.617	2.557	4.200	3.200
Other producers	0.781	0.043	0.052	0.095	0.563	0.876	1.440	1.055	1.122	1.843	0.843
General government services	0.533	0.092	0.084	0.175	0.455	0.708	1.163	1.172	1.329	2.184	1.184

Source: Authors' calculations with data from the Supply and Use Tables (SUT) of Statistics South Africa (Stats SA).

Table 24: Employment Multipliers 2009

Industry	Initial effects	First round effects	Industrial support effect	Production induced effect	Consumption induced effects	Simple	Total	Type 1A	Type 1B	Type 2A	Type 2B
Agriculture, forestry and fishing	7.900	1.346	2.483	3.829	4.263	11.729	15.993	1.170	1.485	2.024	1.024
Coal mining	1.367	1.717	1.747	3.463	3.518	4.830	8.348	2.256	3.534	6.108	5.108
Gold and uranium ore mining	7.631	1.154	1.148	2.302	6.175	9.933	16.108	1.151	1.302	2.111	1.111
Other mining	2.466	1.469	1.508	2.978	3.521	5.443	8.965	1.596	2.207	3.635	2.635
Food	1.156	4.405	3.306	7.711	4.995	8.867	13.862	4.809	7.668	11.987	10.987
Beverages	1.423	3.047	2.802	5.849	5.113	7.272	12.386	3.140	5.109	8.701	7.701
Tobacco	0.198	3.676	2.528	6.204	3.765	6.402	10.167	19.578	32.354	51.383	50.383
Textiles	3.860	2.998	3.055	6.053	6.816	9.913	16.729	1.777	2.568	4.334	3.334
Wearing apparel	6.025	3.368	2.820	6.188	7.314	12.213	19.527	1.559	2.027	3.241	2.241
Leather and leather products	1.807	2.203	4.064	6.267	6.204	8.074	14.278	2.220	4.469	7.902	6.902
Footwear	1.946	2.274	3.955	6.229	6.165	8.175	14.340	2.168	4.201	7.368	6.368
Wood and wood products	3.274	3.443	3.098	6.541	5.650	9.815	15.465	2.052	2.998	4.724	3.724
Paper and paper products	0.924	2.332	3.435	5.766	5.537	6.690	12.227	3.524	7.242	13.237	12.237
Printing, publishing and recorded media	2.399	2.118	3.054	5.172	6.902	7.571	14.473	1.883	3.155	6.032	5.032
Coke and refined petroleum products	0.215	1.876	2.322	4.198	3.526	4.412	7.938	9.745	20.568	37.004	36.004
Basic chemicals	0.397	1.956	2.870	4.826	4.277	5.223	9.501	5.926	13.155	23.927	22.927
Other chemicals and man-made fibres	0.612	1.868	2.958	4.827	5.298	5.438	10.736	4.054	8.890	17.550	16.550
Rubber products	1.443	2.485	3.082	5.567	5.253	7.011	12.263	2.722	4.857	8.496	7.496
Plastic products	1.274	1.525	2.624	4.149	6.738	5.423	12.162	2.197	4.255	9.543	8.543
Glass and glass products	1.466	2.507	2.380	4.888	6.827	6.354	13.180	2.710	4.334	8.990	7.990
Non-metallic minerals	2.546	2.100	2.164	4.265	4.039	6.810	10.849	1.825	2.675	4.262	3.262
Basic iron and steel	0.771	2.251	2.588	4.839	4.959	5.609	10.568	3.920	7.277	13.710	12.710
Basic non-ferrous metals	0.780	1.173	2.022	3.195	3.568	3.975	7.543	2.503	5.095	9.669	8.669
Metal products excluding machinery	3.016	1.921	2.679	4.600	5.868	7.615	13.484	1.637	2.525	4.471	3.471
Machinery and equipment	2.508	2.175	2.750	4.925	6.208	7.433	13.641	1.867	2.964	5.440	4.440

Table 24: Employment Multipliers 2009 (Continued)

Industry	Initial effects	First round effects	Industrial support effect	Production induced effect	Consumption induced effects	Simple	Total	Type 1A	Type 1B	Type 2A	Type 2b
Electrical machinery and apparatus	1.205	1.839	2.785	4.624	5.956	5.828	11.784	2.527	4.838	9.782	8.782
Television, radio and communication equipment	0.963	2.127	2.624	4.751	6.639	5.715	12.354	3.208	5.932	12.825	11.825
Professional and scientific equipment	1.636	2.375	2.665	5.040	5.211	6.676	11.887	2.452	4.081	7.266	6.266
Motor vehicles, parts and accessories	1.151	2.240	3.616	5.857	6.473	7.008	13.481	2.946	6.087	11.711	10.711
Other transport equipment	0.992	1.600	2.670	4.270	7.107	5.263	12.370	2.613	5.304	12.467	11.467
Furniture	2.923	2.783	3.695	6.478	6.446	9.401	15.847	1.952	3.216	5.421	4.421
Other manufacturing	2.130	1.803	1.850	3.654	3.837	5.784	9.621	1.846	2.715	4.517	3.517
Electricity, gas and steam	0.825	0.836	1.581	2.416	4.378	3.241	7.619	2.013	3.930	9.239	8.239
Water supply	0.826	0.801	1.796	2.597	3.620	3.422	7.042	1.970	4.144	8.529	7.529
Building construction	3.103	1.954	3.067	5.021	4.490	8.125	12.615	1.630	2.618	4.065	3.065
Civil engineering and other construction	3.733	1.855	2.528	4.382	4.409	8.115	12.525	1.497	2.174	3.355	2.355
Wholesale and retail trade	6.438	1.233	1.400	2.633	4.865	9.071	13.936	1.192	1.409	2.164	1.164
Catering and accommodation services	7.462	1.856	2.589	4.445	4.276	11.908	16.184	1.249	1.596	2.169	1.169
Transport and storage	2.265	1.255	1.763	3.018	3.879	5.283	9.163	1.554	2.333	4.046	3.046
Communication	0.565	1.053	1.674	2.728	4.110	3.292	7.402	2.866	5.831	13.110	12.110
Finance and insurance	1.002	0.703	0.901	1.605	5.088	2.607	7.695	1.702	2.601	7.678	6.678
Business services	4.155	1.401	1.566	2.967	3.934	7.122	11.056	1.337	1.714	2.661	1.661
Medical, dental and veterinary services	1.959	1.816	2.057	3.872	5.057	5.831	10.889	1.927	2.977	5.558	4.558
Excluding medical, dental and veterinary services	1.393	2.080	2.160	4.240	4.422	5.633	10.055	2.492	4.043	7.216	6.216
Other producers	31.002	0.702	0.771	1.473	9.858	32.475	42.333	1.023	1.048	1.365	0.365
General government services	4.441	1.014	1.189	2.203	7.964	6.644	14.608	1.228	1.496	3.290	2.290

Source: Authors' calculations with data from the Supply and Use Tables (SUT) of Statistics South Africa (Stats SA).

Table 25: Import Multipliers 2009

Industry	Initial effects	First round effects	Industrial support effect	Production induced effect	Consumption induced effects	Simple	Total	Type 1A	Type 1B	Type 2A	Type 2b
Agriculture, forestry and fishing	0.064	0.125	0.194	0.319	0.233	0.382	0.616	2.967	6.014	9.678	8.678
Coal mining	0.021	0.135	0.154	0.289	0.192	0.311	0.503	7.343	14.599	23.639	22.639
Gold and uranium ore mining	0.000	0.097	0.094	0.191	0.338	0.191	0.528	-	-	-	-
Other mining	0.564	0.097	0.133	0.231	0.192	0.795	0.987	1.173	1.410	1.751	0.751
Food	0.099	0.069	0.218	0.287	0.273	0.387	0.660	1.696	3.901	6.657	5.657
Beverages	0.089	0.060	0.165	0.225	0.280	0.314	0.594	1.678	3.525	6.660	5.660
Tobacco	0.032	0.056	0.191	0.247	0.206	0.279	0.485	2.738	8.698	15.111	14.111
Textiles	0.382	0.176	0.238	0.414	0.373	0.796	1.169	1.461	2.085	3.061	2.061
Wearing apparel	0.566	0.141	0.192	0.333	0.400	0.900	1.300	1.249	1.589	2.294	1.294
Leather and leather products	0.327	0.120	0.212	0.332	0.339	0.659	0.998	1.367	2.015	3.053	2.053
Footwear	0.728	0.209	0.242	0.451	0.337	1.180	1.517	1.287	1.619	2.082	1.082
Wood and wood products	0.094	0.079	0.193	0.272	0.309	0.366	0.675	1.834	3.878	7.151	6.151
Paper and paper products	0.127	0.135	0.255	0.391	0.303	0.517	0.820	2.067	4.079	6.466	5.466
Printing, publishing and recorded media	0.083	0.131	0.224	0.355	0.377	0.438	0.815	2.569	5.248	9.768	8.768
Coke and refined petroleum products	0.232	0.297	0.192	0.489	0.193	0.721	0.914	2.281	3.106	3.936	2.936
Basic chemicals	0.376	0.239	0.258	0.497	0.234	0.873	1.107	1.636	2.320	2.942	1.942
Other chemicals and man-made fibres	0.384	0.184	0.265	0.449	0.290	0.832	1.122	1.479	2.169	2.925	1.925
Rubber products	0.541	0.188	0.270	0.458	0.287	0.999	1.286	1.348	1.848	2.379	1.379
Plastic products	0.217	0.161	0.228	0.389	0.368	0.607	0.975	1.739	2.789	4.483	3.483
Glass and glass products	0.203	0.153	0.180	0.333	0.373	0.536	0.909	1.754	2.638	4.474	3.474
Non-metallic minerals	0.195	0.201	0.177	0.377	0.221	0.572	0.793	2.030	2.937	4.070	3.070
Basic iron and steel	0.096	0.245	0.213	0.458	0.271	0.554	0.825	3.543	5.759	8.577	7.577
Basic non-ferrous metals	0.154	0.157	0.190	0.346	0.195	0.500	0.695	2.018	3.252	4.520	3.520
Metal products excluding machinery	0.191	0.093	0.235	0.328	0.321	0.519	0.840	1.490	2.722	4.405	3.405
Machinery and equipment	1.509	0.319	0.258	0.577	0.339	2.086	2.425	1.211	1.382	1.607	0.607

Table 25: Import Multipliers 2009 (Continued)

Industry	Initial effects	First round effects	Industrial support effect	Production induced effect	Consumption induced effects	Simple	Total	Type 1A	Type 1B	Type 2A	Type 2b
Electrical machinery and apparatus	0.541	0.180	0.252	0.432	0.326	0.973	1.299	1.333	1.799	2.401	1.401
Television, radio and communication equipment	2.919	0.861	0.463	1.324	0.363	4.243	4.606	1.295	1.453	1.578	0.578
Professional and scientific equipment	2.647	0.297	0.221	0.518	0.285	3.165	3.449	1.112	1.196	1.303	0.303
Motor vehicles, parts and accessories	0.541	0.261	0.322	0.583	0.354	1.124	1.478	1.482	2.078	2.732	1.732
Other transport equipment	0.957	0.359	0.310	0.670	0.389	1.627	2.015	1.375	1.699	2.105	1.105
Furniture	0.252	0.107	0.223	0.330	0.352	0.582	0.934	1.425	2.310	3.710	2.710
Other manufacturing	0.172	0.177	0.151	0.329	0.210	0.500	0.710	2.032	2.915	4.138	3.138
Electricity, gas and steam	0.000	0.047	0.122	0.169	0.239	0.169	0.408	-	-	-	-
Water supply	0.000	0.064	0.148	0.212	0.198	0.212	0.410	-	-	-	-
Building construction	0.002	0.099	0.222	0.321	0.245	0.323	0.569	57.008	182.689	321.504	320.504
Civil engineering and other construction	0.005	0.134	0.204	0.339	0.241	0.343	0.585	28.232	69.556	118.371	117.371
Wholesale and retail trade	0.000	0.030	0.111	0.141	0.266	0.141	0.407	101.281	476.998	1375.423	1374.423
Catering and accommodation services	0.184	0.043	0.142	0.184	0.234	0.369	0.602	1.231	1.999	3.268	2.268
Transport and storage	0.084	0.099	0.161	0.260	0.212	0.343	0.556	2.174	4.093	6.620	5.620
Communication	0.048	0.208	0.234	0.442	0.225	0.489	0.714	5.370	10.274	14.991	13.991
Finance and insurance	0.009	0.013	0.053	0.065	0.278	0.074	0.352	2.423	8.411	39.952	38.952
Business services	0.012	0.055	0.119	0.174	0.215	0.186	0.401	5.756	16.083	34.713	33.713
Medical, dental and veterinary services	0.003	0.135	0.163	0.298	0.276	0.301	0.577	52.199	114.389	219.624	218.624
Excluding medical, dental and veterinary services	0.015	0.176	0.177	0.353	0.242	0.368	0.610	12.524	24.109	39.954	38.954
Other producers	0.098	0.034	0.062	0.096	0.539	0.195	0.733	1.344	1.980	7.464	6.464
General government services	0.000	0.060	0.102	0.162	0.435	0.162	0.598	-	-	-	-

Source: Authors' calculations with data from the Supply and Use Tables (SUT) of Statistics South Africa (Stats SA).