High Tech, Low Fertility, Korea Becomes a Role Model in Cultural Industrial Policy*

An-Chi Tung** · Henry Wan, Jr.***

High tech products come from highly educated societies, where families choose quality over quantity in children, causing low fertility, hence, population-aging, and labor shortage. From personal stamina and strength, the source of comparative advantages shifts to collective effort like research and public communication, and leadership with insight, reputation and expertise. Hundreds of architects can thrive in a firm under one star leader. In particular, for high tech societies strong in implementation and communication, agglomerative externality benefits fields like entertainment and mass media. Additionally, state sponsorship, social commitment and visionary policies can nurture historical and cultural endowment. Again, by Linder hypothesis, products of national passion evolve into distinctive exports. With wideband infrastructure, successive presidential proclamations on cultural industrial policy, and media support, successful Korean TV plays, movies and on-line games have demonstrated the four-fold economic principles stated above. Thus, for on-line games, 34 Korean universities established major programs, and qualified draftees can substitute game training for military duties. A leisure activity soon becomes a national sport. A key impact may be on economic structure: triumphs have invited creative pioneers to augment thriving Chaebols.

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1. INTRODUCTION

Korea is a leading high-tech supplier in today’s world. It has a very low fertility rate, which is typical in East Asia. It has also adopted a unique and successful cultural industrial policy, which is significant for economic development. This paper maintains that all these three facts are related, in the context of the demographic transition of a society, and provide much food for thought in economic policy making. Korea is a nation with its special historical and cultural heritage, but demographic transition is a process facing most economies. Therefore, in cultural industrial policy, it is the demographic forces that make Korea’s experience relevant for the rest of the world.

Historically, cultural policy in Korea has three motives: (i) the affirmation of national identity, which started from the presidency of Syngman Rhee, (ii) the serving as an instrument to strengthen an authoritarian regime, as in the era of Park, Chun, and Roh, and (iii) the contribution toward national economic interest, that was intensified under Kim Dae Jung, in the economic trauma of 1998 (Yim, 2002). With the coming of democracy, cultural policy no longer plays its role to uphold the political incumbent. Both the last and the current presidents of Korea, have invoked the promise of a strong Korean economy to justify the goal of a strong Korean culture. It is impressive that although over a wide range of issues — including the emotional question of how to deal with North Korea — Presidents Roh and Lee disagreed with each other, they linked the inspiring goal of national culture to the practical concern of economic performance, in nearly identical statements, by apparently holistic reasoning. Pragmatically, they carried further the promotion of cultural industries like President Kim Dae Jung who regarded the cultural industries as significant resources to create national wealth.

It is to be expected that, when national economic interest coincides with some lofty principles, countries wisely choose to emphasize the latter aspect in international debates. Thus, for pharmaceutical inventions, India accepted process innovation, but not product innovation, as the basis for patent
protection and maintained that human life ought to have a somewhat better claim than profit. Therefore, when against American opposition, Korea adopted the screen quota system, requiring Korean movie theaters to show domestic films for at least a certain number of days, a simplistic interpretation is that Korea’s culture promotion is simply economic nationalism. To wit, when the French government pursued a similar policy, no reference was made about French national wealth. But this interpretation does not seem to be fair, judging from the comprehensiveness of the Korean program, the passion to make the Korea’s own product perfect, and the pride Koreans take concerning their artistic achievement. It seems, at the most, economic advantages have reinforced what Koreans would have done happily, in any case, to promote their refined and age-old culture.

This study is not a historical inquiry into the decision process of Korean policy makers. On the other hand, Koreans are a pragmatic people. They are not likely to adopt a policy just because of its lofty objectives, heedless of the practical constraints facing all mortals. As an example, after the Korean armistice, President Rhee advocated ‘Marching North’. But over his own rule of 18 years, President Park, a professional soldier himself, and a person nobody has ever regarded as faint in heart, would not make any serious attempt to unify the country by the force of arms, whatever the outcome. In short, regardless why the Korean government has implemented its current cultural industrial policy, this agenda cannot possibly be continued, if it has brought about great and enduring disadvantages to the economy. In attempting to treat the Korean experience as a ‘light unto the nations’, this paper would limit the discourse on the more prosaic ground of economic reasoning. Three questions will be addressed:

(i) What are the economic advantages of the Korean cultural industrial policy?
(ii) How have Koreans succeeded in their policy?
(iii) What is the background against which Korea took such policy initiatives?
2. A METHODOLOGICAL NOTE

As it will be seen, by its thorough nature and its comprehensive scope, the current cultural industrial policy of Korea stands in a class all by itself. Moreover, in its present form, much of the programs do not yet have a long track record. It appears therefore impossible at the present, to study such a program by either an econometric or historical approach. At the same time, like all real life policies, the success or failure of the Korean program will certainly be decided, not just by its broad outline alone, but also in its details. These latter are so intricate to place the subject beyond the reach of most tractable, purely analytic models, or credible calibrating exercise. In fact, a similar point was made in a research monograph partly backed by the Korean Development Institute, namely, Stern, Kim, Perkins, and Yoo (1995).

On the other hand, one can take an ‘ethnographic approach’ and ask rather realistically, where did Korean policies come from. Unlike policies, say, of U.A.E. or some Latin American republics, they are drawn up by Korean policy makers, backed by Korean technical staffs, using Korean statistical data sources, within Korean policy making organizations, .... About each of these, from books, observations by Japanese economists, and personal contacts, enough is known for the current purpose. In Korea, since the beginning of its rapid growth of the 1960s:

- The research institutes were staffed by economists educated in American and European universities, and are quite sophisticated in their reasoning (Jones and Sakong, 1980). They compare favorably to the MITI staffs in Post WWII Japan, as depicted by Komiya (1988).
- The research organizations are well funded and effectively configured, relative to those in Taiwan, another high tech supplier in East Asia, with a low fertility rate.
- The statistics data are broadly comparable to those of Taiwan (which are regarded as good by foreign researchers).
- Policy makers are well versed in economies used as benchmarks, such as Japan, America, and in the very early days, Taiwan (Stern, Kim,
Policy making has been characterized as bold in initiatives, but ready for revision (Jones and Sakong, 1980) and admired by Japanese researchers like Kikkawa and Hikino (1999).

Therefore, in trying to make a useful and timely study of Korean policies, it is reasonable to assume that such policies are made on the basis of good data, informed observations on their ‘benchmark’ economies, and the available principles in the economic literature.

Section 3 below discusses the nature of the cultural products, and why they become promoted so enthusiastically in Korea. Following that, section 4 analyzes what it takes to launch these industries successfully. After that, in section 5, a systematic review is made regarding the sequence of events leading to Korea’s recent actions. As conclusion, in section 6, one shifts the focus to the international scene, noting that in the time to come, the Korean experience is likely to be studied elsewhere in a globalized world, and inquiring the natural question: what if all countries adopt cultural industries of their own, in the Korean style.

3. THE ECONOMICS OF CULTURAL GOOD

3.1. Korean Cultural Goods, Historical and Created

What product qualifies as a cultural good seems to be to the eye of the beholder. For settling disputes, the WTO/GATT arrived at a definition after extensive debates, and the result still differs from the listing under the Korean Cultural Industry Promotion Act (1999) under Kim Dae Jung. The listed industries include publishing and printing, advertising, film, broadcasting, digital content, video, music, animation, design, crafts, character, fine arts, and games among many others. In the beginning, neither publishing and printing, nor advertising, nor games appear to have that close relationship with the historical Korean identity as compared to the cases of
Table 1  Selected Korean Cultural Industry Policies since 1994

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>Bureau of Cultural Industry within the Ministry of Culture and Tourism (MCT) set up</td>
</tr>
<tr>
<td>1995</td>
<td>Motion Picture Industry Promotion Law enacted</td>
</tr>
<tr>
<td>1995</td>
<td>Sound Records, Video Products and Game Products Act enacted</td>
</tr>
<tr>
<td>1997</td>
<td>The Seoul Studio Complex built up</td>
</tr>
<tr>
<td>1998</td>
<td>Korea IT Promotion XXX (KIPA) set up</td>
</tr>
<tr>
<td>1999</td>
<td>Cultural Industry Promotion Act promulgated</td>
</tr>
<tr>
<td>1999</td>
<td>5-year Plan for Cultural Content Industry set up</td>
</tr>
</tbody>
</table>
| 1999 | – Cyber Korea 21 (1999)  
| 1999 | – Content Korea Vision 21 (2000)  
| 1999 | Korea Game Promotion Center (KGPC) set up |
| 1999 | Korea Game Creation Support Center set up (renamed as Korea Game Industry Agency, KOGIA in 2007) |
| 1999 | Korean Film Commission (KOFIC) reorganized from Korean Motion Picture Promotion Corporation (set up in 1973) |
| 1999 | Korea Game Development & Promotion Institute (KGD) set up (reorganized from Korea Game Promotion Center, KGPC) |
| 1999 | Korean Academy of Animation Arts set up |
| 2000 | Cultural Industry Fund established |
| 2000 | Game Academy set up under KGDI |
| 2001 | Korea Culture & Contents Agency set up |
| 2000 | Non-governmental Game Cultural Promotion Council set up |
| 2004 | Content Industries selected as a growth engine for next generation |
| 2006 | Game Industry Promotion Act enacted |
| 2009 | Korea Creative Content Agency (KOCCA) set up, integrating five organization: the Korean Broadcasting Institute, the Korea Culture and Content Agency, the Korea Game Development and Promotion Institute, the Culture & Contents Center, and Digital Contents Business Group of the Korea SW Industry Promotion Agency |

Sources: Yim (2005), KOGIA (2007).

films, broadcasting and digital content. Nonetheless, although publishing and printing as well as advertising have received little government attention, online games, under the games category, have received massive, multifaceted government support, along with films, TV drama, and digital content. It rapidly becomes such a national passion, hence, part of the ‘Korean culture’!
Table 1 shows the sequence of the major Korean cultural industry policy measures since the mid 1990s.

3.2. The Demand Characteristics of Cultural Goods

(a) The micro-economic aspects. Cultural goods have the following attributes:
- With an income-elastic demand, their spending share rises with national wealth.
- Much of such products are consumed at all ages, hence retain market shares with rising life expectancy.
- Their use may be habit-forming, so their demand becomes more stable over time.
- Their domestic flavor makes such products less vulnerable to import competition.
- Once they gain reputation, they confer authenticity to local tourism.
- If quality and reputation grow over time, they may form the basis for export.

(b) The macro-economic aspect. The gaining of popularity of local cultural goods would improve the balance of payment and/or the terms of trade for the home country.

The range of cultural goods often overlaps with part of range of what is known as the creative goods. For some of the grounds covered above, see also UNCTAD (2004). In many cases, cultural goods are supplied by monopolistically competitive industries. The profit margin does not necessarily shrink toward zero. On the other hand, the market demand may be threatened by the changes in style. This weakness is less threatening as long as there is an adequate stream of profitable entrants joining the market, at all times.

Figure 1 suggests the success of Korean cultural industrial policy. It may be true that the consumption of cultural industry product will rise as the society becomes more affluent. Two points must be made here, however.
First, one might note that over the period covered by figure 1, the rise of sales value of cultural goods in the histogram almost parallels the curve displaying the ratio of consumption of cultural products to GDP. The implication is that this is not a period of rapid income growth, so therefore the gains in sales value seem to be basically substitution among consumption goods. Second, not all cultural goods consumed are Korean, so that the increase of sales of Korean cultural goods in the Korean market has much to do with the success of the Korean cultural industrial policy.

From the viewpoint of recent Korean economic history, the crisis of 1997-1998 was caused by the conjunction of the falling of world market price of Korean outputs and the withdrawal of short-term foreign loans borrowed by the Korean economy. Under the cultural industrial policy, the increased consumption of Korean outputs in the form of cultural industry products is clearly an effective antidote against such a malaise. This point is even more
relevant, when the cultural industry product is habit forming, like on-line games (Obstfeld, 1992).

### 3.3. The Supply Characteristics of Cultural Goods

The foundation for the cultural industries is built upon *current creativity* and *past tradition*. But in activities generating knowledge capital, with all the relevant externalities involved, certain enabling factors are crucial, for such industries to thrive in a modern economy:

- A technological infra-structure — for instance, the high tech facilities for the implementation and distribution of the output
- The entrepreneurial set-up to secure the sufficient reward to keep the enterprise going
- An effective government to provide the needed institutional support

More specifically, in an advanced society, there are all the excellent opportunities to supply high quality cultural goods to a mass class of users. But on the other hand, nothing comes cheap. In an externality-ridden society, to assure that an adequate income stream is forthcoming to sustain the creation and delivery of the product, there must an effective government with the right objective.

What makes Korea especially qualified to sustain such cultural industries? Korea has the cultural heritage, and the talented performers. But so are many other societies. The difference is, Korea was already a high tech society more highly connected with internet than most other societies,\(^1\) with much of the infrastructure on hand. Korea has a core of entrepreneurs, with the export experience to handle the global business side of the operation, and finally, there is a government with the vision, the commitment and the effective organization to carry out industrial policies if it chooses to support the current undertaking.

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\(^1\) In 2009, Korea has the highest household broadband percentages (95%) in the world. Taiwan broadband usage is the 5th (81%), Japan the 16th (64%), and US the 20th (60%) (http://arstechnica.com/tech-policy/news/2009/06/us-20th-in-broadband-penetration-trails-s-korea-estonia.ars).
4. HOW HAS THE GOVERNMENT SUCCEEDED IN PROMOTING THE CULTURAL GOODS?

4.1. The General Principle

In Korea, the promotion of a (new) product is subject to two different precepts:

(i) The Schumpeter Hypothesis, under which the pioneer needs protection.
(ii) The Law of Arrow, under which, monopoly incurs inefficiency.

The essence of policy design is to find the proper balance between these two influences. Thus, although Hong Kong has produced movies winning both critical and commercial success, there is not a cultural policy and hence no stable environment, so the cinema industry can easily suffer in bad times. Likewise, in the Soviet period, Russia did produce a sequence of masterpieces, backed by a state which spared nothing to deliver such showpieces. But lacking market pressure, the average quality of Soviet Russia movie was not what it should be, to say nothing of the cost-effectiveness of its production. Many talented would-be producers did not have the opportunity to make their mark.

In general, Korea industrial policy may be distinguished by three characteristics:

(i) Forceful policy statement from the national leadership.
(ii) Consistent commitment by successive administrations on long term priorities.
(iii) Sensitive to the ideal of promoting ‘national champions’.

Perhaps due to the nature of the cultural industries, but also perhaps because of the reactions against the business groups as putative culprits for the 1997-1998 Crisis, a new element emerged by the turn of the millennium.
In launching the cultural industrial policy, the leading roles are now played by individual artists, and not the large studios, like in America or Japan, nor the state agencies like under the former Soviet Russia.

4.2. An Example

The development of the on-line game stands out as a case showcasing the Korean approach.

Before discussing what on-line game is and how Korean industrial policy is involved, it is desirable to briefly discuss its characteristics:

- This is a ‘big’ industry, judging from 2008 data, in the number of players, in domestic market, and in industry export. The worldwide players were 500 million, more than ten times of the Korean population. The domestic market was 2.9 billion dollars, not a trivial number. Export of the industry was 10 million dollars, more than four times of the export of Korean movies.
- It is a fast-growing industry. For both major typed of games, the ‘casual’ game and the Massive Multiplayer On-line Role-Playing Game (MMORPG), the growth rates are around 29% in 2006 and 17% in 2007.
- It is a complex game, where players interact over the internet in virtual setting with chosen characters which develop under their control, within certain designed theme.
- It is a Korean-dominated game in which the Korean market ranks larger than the Chinese, then the American and then Japanese and European.
- It is a game supported by the government in various ways as explained later.
- It is a well-thought out game, with low entry cost to attract the customer (in comparison with the Video Game), but played over a special server which is totally controlled by the company. It is culture neutral (complementary to TV-drama and movie that are Asia-centric), habit-forming (where each theme may last two years), and has built-in opportunities for improvement for the content. It offers fantasy for the
player to immerse in, also chances to boost their ego with contests and honors. It allows for opportunities to make money by selling in-game peripherals.

Korea supports this industry with various policy measures:

1. At the industry level, it sets up the country-wide internet connection, and creates the legal and regulatory base, with the Korea Game Industry Agency (1999) for regulation, and the designation of certain game development venture companies as military appointment companies, so that working in these firms can be counted as enlistment. It introduces the relevant software technology by contacting expert from abroad at the Soft Expo, and transfer from ETRI, the government research institute.

2. At the firm level, it sets up Game Scenario and Development Contests so that the winners can receive training under the On-line Game Incubator Program.

3. At the level of workers, the government arranges department programs for game development at 13 graduate schools, 34 undergraduate colleges and 3 colleges, beside a Digit Contents Academy (2000).

4. At the level of finance, it provides funding for Digit Content, and facilitates foreign direct investment from abroad.

5. At the level of specific transactions, it assists the export drives, helps to predict market fashion change in game themes, and provides support to design new game themes.

Note that in table 1 in the previous section, all items of industrial cultural policy since 2000 are related to some degree to the on-line game industry. Remarkably, this new stage of Korean industrial policy is entirely independent from any reliance from the influence of the business groups.

5. AGAINST THE DEMOGRAPHIC BACKDROP

Three global mega trends loom behind the developed and developing
societies:

A. Technology – in two aspects:
   A1. From agrarian to industrial to a service dominated society
   A2. From light industry, heavy industry and high tech (hard-softwares and content)

B. Education
   From literacy to elementary, middle education to college and post-graduate schooling

C. Demographic transition – in three aspects:\(^2\)
   C1. (In flow) From the falling of mortality rate to the falling of fertility rate
   C2. (In stock) Toward graying and aging society
   C3. (In structure) From extended to nuclear family and loosening family bound

These three strands interact, forming complex but alternative causal links even among the four Confucian societies: Japan, Korea, Taiwan and Chinese Mainland.

In briefest outline, what came to pass is that as technology progress accelerated in the mid-20th Century, societies with high literacy, but low income and late industrial development became the destination of outsourcing, starting from Japan’s serving as the off-shoring supply base for America during the Korean War. Technology transfer brought the rapid Japanese economic recovery, then high growth, causing the sharp labor shortage, and rising education among Japan’s youth, and made the traditional, labor intensive industries non-sustainable. Migration of such industries started first to Taiwan and Hong Kong, and a little later to Korea (Kojima, 1978; Ozawa, 1979). Kaohsiung Export Zone in Taiwan and Masan Free Trade Zone in Korea soon emerged, with great success. As stated by Dr. Nam Duck Woo (1997), in view of the impending competition from economies with even lower wages, Korea placed industry upgrading as the

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\(^2\) For detail, see Appendix for the population pyramids of Japan, Korea, Taiwan, and China in 1950-2005.
national priority. The more accommodating approach of Taiwan to subcontracting was decisively rejected in Korea (Stern et al., 1995), notwithstanding the latter’s success in overtaking Taiwan at Masan, for the Heavy Chemical Industry Drive. At a somewhat milder pace, Taiwan also followed a similar path. During this time, education attainment has risen and fertility fallen in both Korea and Taiwan, due to delayed marriage in an industrializing society also the income-elastic demand for education for those becoming affluent. With the energy crisis and the microelectronic revolution, together with the vertical disintegration of the high tech sector, both Korea and Taiwan shifted again into the electronics industry, away from the heavy industries. The somewhat faster pace of industry upgrading made Korea to rely more on the heavily leveraged business groups, causing Korea to suffer somewhat more than Taiwan during the Financial Crisis of 1997-1998. The reform of China intensified competition in the world market For Korea’s loss of much of the American market, see Kim (2000). The price for DRAMs has fluctuated widely, hurting Korea, and the profit margin has become paper thin for Taiwan (Tung and Wan, 2007). For Korea’s shifting toward the cultural industries, see figure 1.

If college enrollment rate is an indication, then the Korean society clearly marches at the forefront of its neighbor, Japan (figure 2). Within this kaleidoscopic development, the most relentless and potentially poignant force is no doubt the demographic, as the Westernized societies apparently rushing toward the irreversible demographical (if not politico-military) subsidence, surrounded by a sea of the more traditional cultures (which reject all Western or liberal influences), at a pace even faster than the Western societies.

While the following thoughts are totally speculative, common sense predicts that presumably, within two generations, the hard-wired instinct for collective, cultural self-preservation of these pragmatic, long-surviving societies would cause some dramatic and fundamental reorientation to usher in a demographic turn-around. Judging from the decisive and organized manner with which the Korean society has met challenges in the past, it is entirely possible that some far reaching social development may emerge there,
Figure 2  Tertiary Education, Korea vs. Japan


solving the demographic conundrum.

In any case, before then, when hunger, disease and privation become a thing of the past to an affluent but rapidly aging, post-industrial society, the adoption of a public policy by Korea centered on cultural industries cannot be simply construed as something merely relevant for economic national interest.

6. CONCLUDING REMARKS

The success of the Korean cultural industrial policy has met some resistance from its Asian neighbors as late comers. The natural question is what if all countries emulate Korea’s success. Taking a long view, the situation seems to be much more reassuring. As the world becoming more affluent, there will be more purchasing power from a broader range of
countries for the continuing refining product of Korea’s cultural industries, so that even when countries like Vietnam may gain more domestic market share, from their own local products, cultural diversity will be to the benefit of everyone, as the rise of national music from various European countries has demonstrated, in the past two centuries. Of course, not all countries are likely to excel in the same type of music all the time, but that is just what David Ricardo showed in international trade, two centuries ago. There are gains from trade, when a country participates in the world market and specializes, based on its comparative advantage. It was Grandmont and MacFadden (1972) who showed decisively, that this is true, not for one country which joins the world trade, but for trade opens to all countries initially in autarky.
APPENDIX

Table A1  Population Pyramids of Japan, Korea, Taiwan, and China (1950-2005)

<table>
<thead>
<tr>
<th>Year</th>
<th>Japan Male</th>
<th>Japan Female</th>
<th>Korea Male</th>
<th>Korea Female</th>
<th>Taiwan Male</th>
<th>Taiwan Female</th>
<th>China Male</th>
<th>China Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1960</td>
<td>19.12%</td>
<td>18.02%</td>
<td>19.30%</td>
<td>17.60%</td>
<td>14.40%</td>
<td>17.10%</td>
<td>16.70%</td>
<td>15.50%</td>
</tr>
<tr>
<td>1970</td>
<td>19.59%</td>
<td>18.02%</td>
<td>18.60%</td>
<td>16.50%</td>
<td>15.57%</td>
<td>17.70%</td>
<td>16.50%</td>
<td>15.50%</td>
</tr>
<tr>
<td>1980</td>
<td>14.60%</td>
<td>13.20%</td>
<td>22.90%</td>
<td>21.50%</td>
<td>21.70%</td>
<td>22.60%</td>
<td>19.50%</td>
<td>19.40%</td>
</tr>
<tr>
<td>1990</td>
<td>15.80%</td>
<td>14.71%</td>
<td>20.00%</td>
<td>19.60%</td>
<td>17.91%</td>
<td>18.31%</td>
<td>21.00%</td>
<td>21.67%</td>
</tr>
<tr>
<td>2000</td>
<td>13.20%</td>
<td>12.60%</td>
<td>17.00%</td>
<td>15.70%</td>
<td>17.45%</td>
<td>17.34%</td>
<td>15.91%</td>
<td>15.03%</td>
</tr>
<tr>
<td>2005</td>
<td>12.02%</td>
<td>10.50%</td>
<td>13.19%</td>
<td>13.69%</td>
<td>14.14%</td>
<td>14.62%</td>
<td>17.18%</td>
<td>17.05%</td>
</tr>
</tbody>
</table>

Notes: 1) Numbers shown for each year are the % of those aged 15-24 in total population by sex, 2) In Taiwan, male % in 1960 is underestimate.
Sources: 1) UN, World Population Prospects, 2008 revision (http://esa.un.org/unpp/index.asp?panel=2), 2) Taiwan data from DGNBAS.
REFERENCES


