APPENDICES TO "CAPITALISM REASSESSED"

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APPENDIX TABLES

APPENDIX 2-1: ETYMOLOGY OF "CAPITALISM"

"Capitalism," of course, is derived from "capital." The latter word comes from the Latin words capitalis, capitale, which in Western Europe in the Middle Ages designated, among other things, "property" and "wealth." (Berger, 1986: pp. 17-18).

In classical Latin, however, "property" was designated by a different word, namely caput. The Thesaurus Linguae Latinae (1906-12, vol. 3: 43-34) provides examples of this usage: for instance, around 30 B.C., Horace employed it to indicate "property" in his Satire 1 (Book 2, line 14). Several decades after Horace, Livy also employed the word with roughly the same meaning. A common derivation linking "capital" to "head of cattle" (hence wealth) appears to be incorrect.

Berger also claims the word "capitalism," designating owners of capital, seems to have first appeared in the seventeenth century, although other scholars place the origins of this word a century later. For instance, the Oxford English Dictionary claims that the first use of the English word "capitalism" can be found in William Makepeace Thackeray's novel The Newcomes (1855, vol. 2: p. 45), where it seemed to refer to money-making activities and not an economic system. The Centre national de la recherche scientifique (1977, vol. 5: 143) cites the first usage of the word "capitalisme" in French in 1753; but at that time the word seemed also to refer to an economic activity, not to an economic system. According to Passow (1927: 2) the first German usage of "Kapitalismus" was in Nazional-Oekonomie (1805) by Friedrich Julius Heinrich von Soden, who referred to "capitalistic production," again in the sense of an activity, rather than an economic system.

For most of the nineteenth century scholars seldom employed the word "capitalism," and even Karl Marx used the term infrequently, although he sometimes spoke of "capitalist production". By the latter part of the nineteenth century the word was, however, widely used in the

popular press, usually for polemical purposes; and with the publication of Werner Sombart's Der moderne Kapitalismus in 1902, other scholars began to employ the word with increasing frequency. Passow (1927) records many scores of different and conflicting meanings for "capitalism" by the 1920s, few of which lead to easy quantification.

APPENDIX 2-2: MEASURING MODERN CAPITALISM AND POLITICAL FREEDOM

Measuring capitalism requires measuring institutions, which is, of course, a difficult task, especially for years before 1990 when data are scarce. I distinguish between modern capitalism, which is my designation of economic systems in 2000 (and for which we have a number of institutional indicators) and early capitalism, economic systems in the nineteenth century which can be measured only by one imperfect indicator. This is discussed in Appendix 3-1.

All specific indicators for modern capitalism mentioned below are transformed so that the mean of the sample for each indicator is set at zero and its standard deviation is set at one. The summary measures are also transformed in a similar manner. The correlation matrices, calculated from the adjusted coefficients of determination, are reported below.

Aside from the requirement discussed in chapter 2 that the per capita GDP must be at least $1,689 in 1990 dollars, my measure of the degree of capitalism in 88 countries in the year 2000 takes three other quantitative indicators into account, all of which reflect the definition of capitalism outlined in chapter 2.

1. Legally protected and substantial private ownership of the means of production

Governmental protection covers both ownership itself and the profits derived therefrom. It is assessed using six highly related indicators: the degree of a country's "rule of law"; the independence of its judiciary; the impartiality of its courts; its protection of intellectual property; the degree of its "law and order"; and its legal enforcement of contracts. Sources and methods used to estimate these indicators, as well as all others discussed below, are presented in Table A-1 below. Since these six indicators are highly correlated, I give each of them equal weight to calculate a "property protection index."

Comparable data on the extent of public and private ownership of the means of production do not seem available. As a proxy, I use private investment as a share of total investment, a series which is weakly but significantly correlated with the "property protection index." I then combined the "property protection index" and the private investment indicator, giving equal weight to both, to calculate an index for "legally protected and substantial private ownership of the means of production."

Table A-1: Measurement of Legally Protected and Substantial Private Ownership of the Means of Production

Correlation matrix

	1.	2.	3.	4.	5.	6.	7.	8.
1. Private investment as a share of total inv.	1.00							
2. Rule of law	0.63	1.00						
3. Judicial independence	0.60	0.90	1.00					
4. Impartial courts	0.61	0.90	0.97	1.00				
5. Protection of intellectual property	0.64	0.90	0.94	0.95	1.00			
6. Law and order	0.55	0.88	0.85	0.86	0.87	1.00		
7. Legal enforcement of contracts	0.44	0.72	0.72	0.72	0.77	0.74	1.00	
8. Combined, all indicators	0.99	0.88	0.88	0.89	0.90	0.83	0.74	1.00

Sources and methods

1. Gwartney et al. (2007): series 1C; an average of values for 1995, 2000, and 2005 for one minus the share of government and government enterprises in total investment.
2. Kaufmann et al . (2007); an average of values for 1996 1998 and 2000 through 2005. The two earlier values are given double weight.
3. Gwartney et al. (2007): series 2A. This is an average of values for 1995, 2000, and 2005.
4. Ibid.: series 2B; an average of values for 1995, 2000, and 2005.
5. Ibid.: series 2C; an average of values for 1995, 2000, and 2005.
6. Ibid.: series 2E; an average of values for 1995, 2000, and 2005.
7. Ibid.: series 2F; an average of values for 1995, 2000, and 2005.
8. Combines indicators 2 through 7, giving equal weight to all
9. Indicator 1 focuses on ownership; indicators 2 through 7 focus on legal protection of private property. The summary measure gives equal weight to the ownership and legal-protection indicators derived from indicators 2 through 7.

2. Competitive markets

"Competitive" means that buyers and sellers in the markets for factors of production and for goods and services must have free entry and exit, and must be able to compete against each other. This implies that an economy of monopolies is not capitalistic, nor is one in which barriers to market entry or exit are significant.

The indicators used to estimate competition are: a "business freedom" index (incorporating information on procedures, days required and fees to the government for starting or closing a business); the extent of price controls; competition in domestic banking; and whether collective bargaining is carried out at the central level or locally. Although a direct measure of monopoly would be useful to include in this index of competition, comparable data are not available. The relationships of these four indicators are shown in Appendix Table A-2.

Table A-2: Measurement of Competitive Markets

	Correlation matrix				
	1	2	3	4	5
1. Business freedom	1.00				
2. Price controls	0.67	1.00			
3. Competition in domestic banking	0.42	0.57	1.00		
4. Collective bargaining at central level	0.20	0.42	0.29	1.00	
5. Combined: all indicators	0.81	0.81	0.82	0.62	1.00

Sources and methods

1. Heritage Foundation (2008); average for 1995, 2000, and 2005. See also Beach and Kane (2008).
2. Gwartney et al. (2007): series 5Ci. an average of values for 1995, 2000, and 2005.
3. Gwartney et al. (2007): series 5Aii, an average of values for 1995, 2000, and 2005.
4. Gwartney et al. (2007): series 5Biii, an average of values for 1995, 2000, and 2005.
5. An average with all indicators given equal weight.

3. Economic Freedom

This concept refers to governmental laissez faire, or the degree to which the government does not interfere in the workings of the economy. This implies that aside from providing goods and services to the economy that private individuals cannot supply (such as infrastructure or protection of property) and enforcing anti-trust regulations, quality standards, and safety regulations, governments do not take other microeconomic measures influencing market activities. If a government regulates some prices or quantities, limits entry into occupations by licenses, provides social security payments and redistributes income, drafts soldiers into the armed forces (rather than setting military pay high enough to encourage voluntary enlistments), or make other substantial interventions into the economy, it must be deemed to have moved away from a capitalist economic system.

My measure of economic freedom includes five indicators: trade freedom, investment freedom, financial freedom, labor freedom, and lack of interest rate regulations. Their interrelations are shown in Appendix Table A-3.

Table A-3: Measurement of Economic Freedom

	Correlation matrix					
	1	2	3	4	5	6
1. Lack of interest rate regulation	1.00					
2. Trade freedom	0.63	1.00				
3. Investment freedom	0.43	0.65	1.00			
4. Financial freedom	0.54	0.73	0.84	1.00		
5. Labor freedom	0.58	0.47	0.08	0.46	1.00	
6. Combined, all indicators	0.80	0.87	0.83	0.89	0.73	1.00

Sources and methods:
1. Gwartney et al. (2007): series 5Aiv; average of values for 1995, 2000, and 2005.
2. Heritage Foundation (2008); average for 1995, 2000, and 2005. See also Beach and Kane (2008).
3. Heritage Foundation (2008); average for 1995, 2000, and 2005. See also Beach and Kane (2008).

4. Heritage Foundation (2008); average for 1995, 2000, and 2005. See also Beach and Kane (2008).
5. Heritage Foundation (2008); average for 1995, 2000, and 2005. See also Beach and Kane (2008).
6. An average with all indicators given equal weight.

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4. The Overall Index of Capitalism

Table A-4 presents the three elements of capitalism and also the combined total, where each of the three elements is given equal weight.

Table A-4: The Three Elements of Capitalism Combined

	Correlation matrix			
	1	2	3	4
1. Property protection, and rule of law	1.00			
2. Competitive markets	0.42	1.00		
3. Economic freedom	0.70	0.67	1.00	
4. Degree of capitalism	0.92	0.59	0.92	1.00

Sources and methods
Data for (1), (2), and (3) come from Tables A-1, A-2, and A-3. For calculating the "degree of capitalism," all three elements above are given equal weights.

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5. Political freedom

The political freedom index combines four characteristics of political freedom and are shown in Table A-5.

.Table A-5: Measurement of Political Freedom

	Correlation matrix				
	1	2	3	4	5
1. Democracy and autocracy measure	1.00				
2. Popular voice in, and accountability of, government	0.81	1.00			
3. Political liberties	0.64	0.66	1.00		
4. Civil rights	0.57	0.65	0.93	1.00	
5. Combined, all indicators	0.85	0.88	0.91	0.89	1.00

Sources and methods

1. Marshall and Jagers (2005): Polity2 variable, which combines democracy and autocracy measures. This is an average of values from 1995 through 2004.
2. Kaufmann et al. (2007); an average of values for 1996, 1998, and 2000-2005. The two earlier values are given double weight.
3. Freedom House (2008); an average of values from 1995-2005.
4. Ibid.; an average of values from 1995- 2005.
5. All indicators are combined with equal weights.

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6. Estimated Results

Finally, Table A-6 shows the quantitative estimates of the degree of capitalism and political freedom, as well as the per capita GDP for 88 countries.

Appendix Table A-6: Measurements of Capitalism and Political Freedom in 2000

	Degree of capitalism	Political freedom,	Per capita GDP, 1990 dollars,
Albania	-0.5810	-0.4950	$2,650
Algeria	-1.7867	-1.7128	2,793
Argentina	-0.0289	0.1967	8,464
Armenia	0.2504	-0.8269	4,375
Australia	1.4816	1.1349	21,498
Austria	0.5408	1.1210	19,961
Azerbaijan	-0.6614	-1.7697	2,529
Belgium	0.6951	1.0100	20,550
Bolivia	-0.5298	0.2289	2,565
Bosnia-Herzegovina	-0.6478	-0.9640	2,786
Botswana	0.5911	0.5693	4,309
Brazil	-0.5054	0.0490	5,506
Bulgaria	-0.4859	0.3910	5,354
Canada	1.4874	1.1754	21,983
Chile	1.5561	0.6154	9,793
China	-1.6310	-2.3364	3,422
Colombia	-0.4519	-0.5111	5,075
Costa Rica	0.0472	0.8860	6,149
Croatia	-0.4637	-0.3058	6,640
Czech Republic	0.7977	0.8546	9,050
Denmark	1.9367	1.1785	22,862
Dominican Republic	-0.6929	0.1366	3,575
Ecuador	-1.1578	-0.0267	3,554
Egypt	-0.9221	-1.8777	2,917
El Salvador	1.0558	0.0578	2,712
Estonia	1.0611	0.6616	10,837
Finland	1.1007	1.1767	$19,895
France	0.3627	0.8906	20,666
Gabon	-1.4922	-1.2255	3,944
Georgia	0.0090	-0.5501	3,080
Germany	0.8154	1.0038	18,450
United Kingdom	2.0267	0.9741	19,745
Greece	-0.1165	0.7303	12,042
Guatemala	-0.3003	-0.4001	3,376
Honduras	-1.0450	-0.1249	1,943
Hungary	0.7582	0.9183	7,111
Indonesia	-1.1281	-1.0429	3,189
Iran	-2.3492	-1.7382	4,731

Table A-6 continued on next page

Table A-6 continued

	Degree of capitalism	Political freedom,	Per capita GDP, 1990 dollars,
Ireland	1.5555	1.1124	21,732
Israel	0.3191	0.5892	15,740
Italy	0.2071	0.8940	18,681
Jamaica	0.2782	0.4133	2,570
Japan	0.7749	0.8259	20,795
Jordan	-0.4313	-1.0907	4,049
Kazakhstan	-0.7499	-1.6943	5,111
Korea, South	-0.1403	0.4770	14,079
Kuwait	0.7354	-1.3822	10,129
Kyrgyzstan	-0.9677	-1.4254	2,250
Latvia	0.3470	0.6559	6,829
Lithuania	-0.2515	0.8095	6,491
Macedonia	-0.0449	-0.2426	3,206
Malaysia	-0.1209	-0.8913	7,682
Mauritius	-0.2980	0.8360	$10,814
Mexico	-0.4593	-0.0585	7,062
Moldova	-0.8437	-0.2472	2,156
Morocco	-0.5577	-1.4044	2,706
Namibia	-0.0481	0.1664	$3,786
Netherlands	1.3717	1.1804	21,435
New Zealand	2.6967	1.1927	15,936
Norway	0.4064	1.1731	24,295
Oman	0.1616	-1.9274	6,915
Pakistan	-0.7287	-1.1804	1,916
Panama	0.3182	0.5105	5,743
Paraguay	-1.0732	-0.3170	3,027
Peru	0.0692	-0.3678	3,652
Philippines	-0.7063	0.1670	2,376
Poland	-0.2463	0.8514	7,215
Portugal	0.3192	1.1223	13,933
Romania	-0.8368	0.3006	3,038
Russia	-1.1298	-0.7581	5,102
Serbia & Montenegro	-0.8596	-0.5240	2,352
Singapore	1.9749	-1.0382	21,357
Slovakia	-0.0720	0.5680	7,867
Slovenia	-0.6440	0.9136	13,396
South Africa	0.0010	0.7270	4,127
Spain	0.3461	0.9555	15,208
Sri Lanka	-0.5664	-0.4124	3,559
Sweden	0.9270	1.1729	20,169

Table A-6 continued on the next page.

Table A-6 continued

	Degree of capitalism	Political freedom,	Per capita GDP, 1990 dollars
Switzerland	1.5032	1.1482	$21,910
Syria	-2.9161	-2.5248	7,506
Taiwan	0.4010	0.5869	16,228
Thailand	-0.1585	0.2091	6,280
Trinidad & Tobago	0.2546	0.5454	13,600
Tunisia	-0.2909	-1.5974	4,545
Turkey	0.1651	-0.5604	6,289
Ukraine	-0.6079	-0.4565	2.769
United Arab Emirates	0.5925	-1.8031	16.340
United States	2.1239	1.0988	27.824
Uruguay	0.0462	0.8788	7.813
Venezuela	-1.7424	-0.2302	8.403

a. Both the degree of capitalism and the political freedom variables are standardized so that for the sample as a whole, their means are zero and their standard deviations are one. The per capita GDP are in international Geary-Khamis dollars. They represent average values for 1999-2001 and come from Maddison (2003).

APPENDIX 3-1: MEASUREMENT OF EARLY CAPITALISM

When we turn to early capitalism, that is, the economic systems of nations in the nineteenth century, data comparable to those measuring modern capitalism are not available. Although central governmental regulations of the economy was relatively unimportant (because these governments found it difficult to enforce their will except in the area of foreign trade), local regulations by both government and guilds were sometimes considerable and difficult to assess. Measuring the protection of property in the various nations is also problematic. Although in most countries government ownership of the means of production was low, it is difficult to assess the degree of monopoly and the extent of competition..

To identify the nations that were capitalist in the nineteenth century, I start with the estimates of Irma Adelman and Cynthia Taft Morris (1978) of the degree to which the transfer of goods, labor, land, and finance passed through the market. Since this marketization measure proves highly correlated with per capita GDP, I was able to extend their estimates to cover a few extra nations. Such a calculation, of course, must be regarded as yielding only tentative results about early capitalism; but as shown in chapter 3, they yield some important insights into the origins of capitalism.

Twenty-four countries passed the “capitalism threshold” before 1900, that is, they reached a point where an average of at least 50 percent of the exchange of goods, labor, land, and finance were carried out through markets. Belgium and the area now called the United Kingdom were the first, followed by the USA and Netherlands. By 1900 only four countries outside of Europe and North America, had high enough marketization to indicate the arrival of capitalism, namely Argentina, Australia, Chile, and New Zealand. Table 3-1 in the text presents those nations in the nineteenth century that passed the capitalist threshold and the years they reached this level.

APPENDIX 3-2: DATA SOURCES FOR TABLE 3-2

1. England

The data come from Homer (1977: pp. 137-38; 156-57). The seventeenth century data are mortgage rates; the eighteenth century data are effective yields of loans to government and represent averages of 25 and 31 years.

2. China

These data come from Homer and Sylla (1996: p. 614). Pomerenz (2008: p. 137) states that in rural China the typical interest rate was 36 percent, but he supplies no date for this rate.

3. France

The data for the seventeenth century are for mortgages and come from Homer (1977: pp. 137-8). For the eighteen century the data are nine-year averages for “rentes” and come from Homer and Sylla (2005: p. 129). I have omitted interest rates for 1798 and 1799, which were extraordinarily high because of political uncertainties.

4. India

The interest rate are averages based on 82 data points and come from Habib (1964), supplemented by Moosvi (2008). They represent interest rates on loans given to English companies in four large regions (Gujarat, North India, the Deccan, and Eastern India) and, according to Habib (pp. 403-4) were generally a little higher than the market rates. Since the interest rates are quite different in the four areas and data are not available for all four areas for the same years, I have had to make adjustments to these averages so they would not be influenced by changes in geographical composition The original rates are given in terms of monthly interest, but Habib (1964: 403-4) argues that there are no references to compounding in the Indian literature, so I have converted these to annual rates by simply multiplying them by twelve.

5. Germany, Italy, Russia

These rates are overall evaluations of Homer and Sylla (1996: pp. 178-9. Unfortunately, the type of rates are not specified, nor how many points were used to arrive at these averages.

6. Japan

Data for the seventeenth century data come from Takekoshi (1930: Vol 2: pp. 186-87). Merchant loans to feudal lords carried lower rates. For the first half of the eighteenth century, Takekoshi cites rates of 15 to 30 percent, which are considerably higher than the rates in the table which come from Shimbo and Saito (2004: p. 358) and represent interest on loans to three different types of borrowers (which define the limits of the stated rates). The sample consists of 24 observations and covers various years in the designated periods.

7. Netherlands

The data are averages for various years and come from Homer and Sylla (2005: pp.126-27). They differ somewhat for the mortgage reports for the seventeenth century reported by Homer (1977: pp. 137-38).

8. Sweden

These data, from Homer and Sylla (1996: p. 180), are lending rates for loans by the Swedish Riksbank, and are based on nine points.

6. United States.

The data come from a heterogeneous sample of eight different observations of quite different types of long-term loans from various types of lenders, reported by Homer and Sylla (2005: p. 275).

APPENDIX 3-3: A SHORT NOTE ON THE BRENNER THESIS

Brenner's thesis requires a number of assumptions, for instance, that the tenant farmers responded to economic incentives to increase productivity, and that their large farms became much more productive than small farms. This thesis has given rise to enormous controversy among historians. For instance, some like Croot and Parker (1987), support Brenner by claiming that only large, centrally-managed farms could carry out such productivity-enhancing steps as the floating of water-meadows or certain reclamation projects, while others point out that small farms could carry out many other improvements such as new rotation schemes, planting new crops, and introducing new husbandry projects. Still others, such as Pryor (2005a: p. 151), also point out that industrialization in the countries now composing the OECD was unrelated to concentration of land into large farms in the nineteenth century.

Rather than review the vast literature on the Brenner thesis, it seems more useful to point out that the debate focuses on the wrong question. To me, three crucial issues seem more important for understanding the role of agriculture in the development of capitalism.

a) How did the concept of ownership change, so that property rights in land were not only private but exclusive? This means that overlapping rights were eliminated and the owners could do with the property as they wanted. The most famous example of this movement was, of course, the enclosure movement in England and the extinction of customary use rights on this land.

b) Who directly benefited from productivity improvements? If the tenant farmer, who made the improvements, found the landlord increasing his rent or charging extra fees or if government agents began to extract higher taxes, then clearly the incentives for making such improvements were low.

c) How were the profits from increased agricultural productivity used? If the profits of higher agricultural productivity were obtained by the government and spent on war, or by the landlord or tenant farmer and spent on imported luxury items, then the development of a capitalistic rural sector would be doubtful. As Jones and Woolf (1969:1) have argued, “One of the less palatable lessons of history is that technically advanced and physically productive agriculture do not inevitably bring along sustained growth in per capita real income . . .” and they use ancient China, Rome, and the Mayans as examples to argue their case

Trade between the urban and rural sectors can only develop when agricultural productivity is sufficiently high that the farmers have a surplus over their own needs to sell and there are urban dwellers willing to buy this produce by increasing production of goods wanted by the rural sector. Otherwise, as noted in the text, the terms of trade will turn against agricultural products and will no longer be useful to the farmers. As the expression goes, it takes two to tango, and we cannot say that the dance originated with just one of the partners.

APPENDIX 3-4: DEMOCRACY/AUTOCRACY AND ORIGINS OF CAPITALISM

Table A-7: Democracy/Autocracy Measures for Early Capitalist Countries and "Capitalist Threshold Year (CTY)

Country	CTY	From 1800 to 20 years before CTY		20 year period before CTY		20 year period after CTY		From 20 years after CTY to 1920		Significance tests
Column nos.		1	2	3	4	5	6	7	8	
		Avg.	s.d.	Avg.	s.d.	Avg.	s.d.	Avg.	s.d.	
Great Britain	1816			-2.00	0.00	-1.00	2.05	5.30	2.29	e,f
Belgium	1829					-4.00	0.00	5.73	2.15	f
USA	1832	5.25	2.26	9.00	0.00	9.25	0.44	9.49	0.87	
Netherlands	1833			-6.00	0.00	-5.55	1.67	-1.81	3.04	
France	1838	-7.11	1.71	-2.80	1.51	-2.40	4.87	4.50	5.43	c
Switzerland	1847					10.00	0.00	10.00	0.00	f
Germany	1855	-9.37	0.27	-8.14	0.64	-6.02	1.42	-0.07	2.89	b,c,e
Austria	1855	-10.00	0.00	-8.60	1.96	-4.50	0.89	-3.47	2.19	
Sweden	1864	-8.43	0.87	-6.10	1.02	-4.25	0.44	-0.50	5.30	b
Denmark	1869	-9.69	0.47	1.55	1.10	-3.00	0.00	2.45	5.25	b,c,d
Canada	1875			4.00	0.00	6.00	2.51	9.00	0.00	e
Australia	1875							10.00	0.00	
Italy	1878			-4.00	0.00	-4.00	0.00	-1.14	0.64	d,e,f
Spain	1881	-5.38	3.05	-2.65	3.36	-4.36	0.69	6.00	0.00	c,e,f
Chile	1882	-3.75	2.19	1.20	1.51	3.30	0.73	3.00	0.00	b,c
New Zealand	1884	10.00	0.00	9.35	1.11	9.60	0.50	10.00	0.00	c
Norway	1886	-7.00	0.00	-4.85	1.73	3.40	6.13	10.00	0.00	c,e
Hungary	1887			-4.00	0.00	-4.00	0.00	-4.15	1.34	d
Argentina	1889	-4.25	0.97	-1.20	2.04	1.00	0.00	1.82	0.40	b,c
Japan	1893	-8.49	3.38	1.00	0.00	1.00	0.00	1.00	0.00	a,b,c
Mexico	1894	-2.78	1.25	-8.30	1.38	-7.20	3.69	-0.67	0.52	a,e
Romania	1894	-4.00	3.38	-7.00	0.00	-5.75	1.12	-4.00	0.00	e
Greece	1897	-5.95	5.28	9.85	0.37	9.50	2.12			a,b
South Africa	1899					4.00	0.00			
Average, total sample		-4.73		-1.48		0.04		3.29		

Notes: The criteria for classifying a country as capitalist are discussed in the text. The data on political freedom come from the Polity2 variable in the Polity IV ratings of democracy (Marshall and Jaggers 2005); they run from -10 (autocracy) to +10 (democracy). The significance tests are t-tests of differences between the means of various columns and the designations are: a = columns B and D; b = columns B and F; c = columns B and H; d = columns D and F; e = columns D and ; and f = columns F and H. The total sample statistics give equal weight to the data for each country. The blanks in the table denote years for which there are data for political freedom, mostly because the nation was a colony of another country or was at war, either internal or external.

APPENDIX 8-1: STATISTICS FROM THE PRINCIPAL COMPONENT ANALYSIS

Appendix Table A-8: Loadings of Principal Components

	Component 1	Component 2	Component. 3
Proportion of variance explained	32.6%	12.5%	9.0%
Eigenvalue	17.3	6.6	4.8
Possible Determinants of Happiness			
Psychological/Personal			
Achievement motivation	0.4222	0.4872	-0.2462
Alcohol use	-0.4335	-0.0493	-0.1031
Belief in personal control vs fate	0.7125	0.3834	-0.3672
Importance of friendship	0.8078	0.0273	0.0494
Individualism	0.8219	0.2432	0.2280
Intolerance	-0.7189	-0.2667	0.2828
Materialism	-0.7244	-0.2059	-0.0828
Murder rate	0.2923	0.6633	0.0657
Religiousness	-0.1540	0.6323	-0.4123
Social participation	0.5525	0.6045	0.0446
Suicide rate	0.4576	-0.4679	0.1316
Trust in others	0.7657	-0.2894	-0.0740
Uncertainty avoidance	-0.8016	-0.0138	0.1334
Work/leisure	-0.4905	0.0745	-0.2556
Health			
Child immunization	0.4943	-0.1055	0.0609
Infant mortality	-0.3727	0.7880	-0.2461
Life expectancy at birth	-0.0466	-0.2112	0.5829
Mortality of children < 5	-0.3621	0.7665	-0.2059
Subjective evaluation of health	0.8414	0.1110	-0.0581
Demographic			
% of aged in population	-0.3576	-0.5700	0.1488
Fertility rate	0.7110	0.1980	-0.2505
Marriage rate	-0.0699	-0.6238	-0.1028
% adults with university degree	0.4309	0.3227	0.4286
% of adults with just HS education	-0.5468	-0.3098	-0.4096
School year expectancy	0.5243	-0.1727	0.2347
Urbanization	0.4908	0.0182	0.4727

Continued on next page.

Appendix Table A-8 continued.

	Component 1	Component 2	Component 3
Economic conditions			
GDP per capita	0.5702	-0.1099	0.4550
Growth rate, GDP per capita	-0.2025	-0.0663	-0.4482
Per capita GDP stability	-0.3221	0.0290	0.1029
Inflation	-0.5627	0.3606	-0.3639
Income inequality	-0.4197	0.7353	-0.1211
Pollution	-0.0643	-0.2535	0.2412
Regulation quality	0.7397	0.0887	-0.3658
Shadow economy importance	-0.6920	-0.1000	-0.1285
Strikes and lockout rate	0.1311	0.2272	0.1104
Unemployment rate	-0.3217	0.0164	-0.0154
Political conditions			
Civil liberties	0.7416	-0.0500	-0.2763
Confidence in government	0.6309	-0.2489	-0.1527
Control of corruption	0.9317	-0.1566	-0.1554
Federal type government	0.2805	0.3186	0.3563
Government effectiveness	0.8692	-0.1296	0.0598
Political stability	0.6733	-0.4008	-0.2611
Proportl representation: lower house	-0.1105	-0.4826	-0.4677
Rule of law	0.9001	-0.2344	-0.0080
Voice in, accountability of govt.	0.8780	-0.2310	-0.2164
Social			
Ethnic heterogeneity	0.2148	0.4543	0.3406
Gender inequality	0.8378	-0.1428	-0.1263
Linguistic heterogeneity	0.3596	0.1025	0.4932
Social/power hierarchy	-0.6574	0.0664	0.4871
Religious heterogeneity	0.4306	0.4825	0.4849
Other			
Historically Protestant	0.8267	0.1206	-0.0948
Population density	-0.2379	-0.3168	0.5422
Population size	-0.2396	0.3888	0.6584

Appendix Table A-9: Component Scores of Possible Determinants for Happiness for Each Country

	Principal component 1	Principal component 2	Principal component 3
Australia	13.892	5.341	0.691
Austria	-2.424	-3.839	-3.660
Belgium	-8.201	-4.744	7.302
Canada	15.456	8.813	4.232
Denmark	12.920	-5.371	-3.440
Finland	13.956	-6.449	-4.170
France	-11.999	-4.769	4.032
Germany	-1.877	-1.846	3.115
Greece	-36.246	7.645	-2.603
Ireland	-2.329	-0.141	-10.076
Italy	-26.658	1.405	0.571
Japan	-18.400	-5.060	9.106
Netherlands	14.523	-3.365	3.231
New Zealand	16.019	6.943	-3.694
Norway	14.686	-7.158	-2.594
Portugal	-26.827	1.864	-8.542
Spain	-19.341	-0.266	1.658
Sweden	18.864	-7.647	-1.401
Switzerland	13.367	-2.461	2.159
United Kingdom	3.944	2.037	1.525
USA	16.676	19.068	2.557

Note: These data show the national scores of each country for each of the first three principal components and are used in Table 7-2 to isolate the impact of the economic system. They represent the sum of the values of each of the fifty-three possible determinant of happiness of each nation multiplied by the factor loadings shown in Appendix Table A-8.

APPENDIX 7-2: UNDERLYING DATA FOR THE DETERMINANTS OF HAPPINESS

Personal/Psychological

Achievement motivation. Percentage of adults who say that the ability to achieve something is important in a job. Data are from Inglehart et al. (2004), variable C018.

Alcohol use. Ratio of liters of alcohol purchased to population 15 and over, averaged for 1994-96. Data are from OECD (2000, 2007).

Belief in control versus belief in fate. Percentage of adults in the 1990 and 2000 interview waves who believe that people have free choice and control over their lives, in contrast to those who believe that they have no real effect on what happens to them. Data are from Inglehart, et al. (2004), variable A173.

Importance of friendships. Percentage of adults who say that having friends is very important in their lives. Data are from Inglehart, et al. (2004), variable A002.

Individualism. An average of two standardized measures of individualism (mean = 0, standard deviation = 1), which are significantly related to each other. The first comes from Hofstede (2001: 500) using a 1967-73 sample of executives; the second was calculated by Harry C. Triandis for the 1980s and is reported in Diener, Diener, and Diener (1995).

Intolerance. Percentage of people who would not like to have as neighbors people of a different race, Muslims, immigrants, or Jews. Data are from Inglehart et al. (2004), variables A125, A128, A129, A133.

Materialism. Percentage of people in the 1990 and 2000 waves who were rated as having materialist orientation, based on their answers to questions relating to national policy goals. Data come from Inglehart et al. (2004), variable Y002.

Murder rate. Murders per 100,000 population, 1990-2000. Data are from OECD (2000, 2007).

Religiousness. Average of three percentages: those who attend religious services more than once a month; those who claim to be religious; and those who believe in life after death. Data are from Inglehart et al. (2004), variables F028, F034, and F051.

Social participation. Percentage of adults in each country carrying out unpaid voluntary work in 14 different organizations (average of 1990 and 2000 waves). Data are from Inglehart et al. (2004), variables A081-A092, A094,A096.

Suicide. Suicides per 100,000 population, averaged for each country from 1990-2000. Data are from OECD (2000, 2007).

Trust. Percentage of adults in each country saying that, generally speaking, most people can be trusted (averages of 1990 and 2000 waves). Data are from Inglehart et al. (2004), variable A165.

Uncertainty avoidance. A psychological measure from Hofstede (2001: 500), who uses a sample from 1967-73.

Work values. An average of two measures of work values (standardized with mean = 0 and standard deviation = 1). Both series come from Inglehart et al. (2004) and are significantly related to each other. The first variable, C041, is the percentage of people who strongly agree or disagree with the statement "Work should always come first, even if it means less spare time." The second variable, A003 and A005, is the percentage of people agreeing with the statement "Leisure is important in my life," subtracted from the percentage of people agreeing with the statement "Work is not important in my life." For the six countries for which no data were available of characteristic C041, only the second characteristic was used.

Health

Child immunization. Average percentage of children aged 12-23 months who have been immunized for measles and DPD, 1990 through 2000. Data are from World Bank (2008).

Infant mortality. Average for 1993-97. Data are from World Bank (2008).

Life expectancy at birth. Average for 1990-2000. Data are from World Bank (2008).

Mortality of children under 5. Average for 1993-97. The data are from World Bank (2008).

Subjective health. Percentage of adult population rating current state of health as good or very good. Data are from Inglehart et al. (2004), variable A009. Greece is estimated as average of Italy, Portugal, and Spain, the other nations with a Southern European economic system.

Demographic

Aged population. Percentage of population over 64 in 1995. Data are from World Bank (2008).

Fertility. The number of children per woman averaged for 1990-2000; Data are from World Bank (2008).

Marriage rate. Marriages as a percentage of population aged 15 through 64 averaged for 1993-97. Data on marriages come from United Nations (1998, 2000); data on population aged 15-64, from OECD (2004).

Percentage of adult population with a university degree. Averages for 1994-96. Data are from OECD (2000).

Percentage of adult population with only a primary or secondary education. Averages for 1994-96. Data are from OECD (2000).

School years expectancy. For population from 25 through 64, averaged for 1994-96. Data are from OECD (2000).

Urbanization. Data are for 1995 and come from World Bank (2008).

Economic conditions

GDP per capita. Average for 1993-97 in constant international dollars. Data are from World Bank (2008).

GDP per capita: average annual growth. Calculated from a regression of value per capita GDP in constant local currency for 1985-2000. Data are from World Bank (2008).

GDP per capita: stability of growth. Coefficients of determination from regressions to determine average annual growth of per capita GDP for 1985-2000. Data are from World Bank (2008).

Income inequality. For all but three countries, an average of the Gini coefficients of size-adjusted family disposable income for the period 1990-2000. Data are from the Luxembourg Income Study (2008). For Japan and Portugal, data are from Brandolini and Smeeding (n.d.), for 1992 and 2000 respectively. For New Zealand, data are from Blaiklock, et al. (2002). Data for Japan and Portugal are based on the same methodology as the LIS data; the New Zealand data appear roughly comparable as well.

Inflation. Average annual rise in cost of living from 1985-2000. Data for Germany covers only the former West Germany and come from Germany, Statistisches Bundesamt (2005: p. 512); for all other countries, data come from World Bank (2008).

Pollution. Metric tons of SO_2 and NOx per million persons per square kilometer in 1995. Pollution data are from World Resources Institute (2008); population and area data are from World Bank (2008).

Regulatory quality. A composite series calculated by Kaufmann, Kraay, and Mastruzzi (2005). Ratings for 1996, 1998, and 2000 are averaged with the 1996 rating given a triple weight to take account of earlier years.

Shadow economy. Ratios of the shadow economy to the GDP are calculated from six series of the shadow economy for 1990-2000, five based on a "cash approach," one on an "electricity approach." Data are from Schneider and Enste (2002: 35, 38). For each of the six series, an average was calculated for the countries for which data were available for all six series, and then for each series each country was then calculated as a percent of this average. These latter percentages were then averaged across all six series and multiplied by the average of the average for the six series.

Strikes and lockouts. Days lost per 1000 workers for 1993-98. Data are from International Labour Office (2002, Tables 2A and 9C). For Greece, the days lost were estimated from the number of workers participating in strikes and lockouts and the average days lost per worker in strikes and lockouts in Italy, Portugal, and Spain, the other nations with the Southern European economic system. For the U.S. data were adjusted upward by 25 percent to take into account strikes and lockouts involving less than 1000 workers.

Unemployment. Average unemployment rates for 1990-2000. Data are from World Bank (2008).

Political conditions

Civil rights. Average for 1990-2000 of the civil liberties scores of Freedom House (2008), but with the scale reversed so that a high score represents high levels of civil liberties.

Confidence in government. The percentage of adults in the 1990 and 2000 interview waves who have "quite a lot" or a "great deal" of confidence in police, parliament, and government. Data are from Inglehart, et al. (2004), variables E074-E076, and E079.

Control of corruption. A composite series calculated by Kaufmann, Kraay, and Mastruzzi (2003). Ratings for 1996, 1998, and 2000 are averaged with the 1996 rating given a triple weight.

Federalism in contrast to a unitary state These data cover the period 1990-2000, with 1 designating a federal state. Data are from Anon (2008).

Government effectiveness. A composite series calculated by Kaufmann, Kraay, and Mastruzzi (2003). Ratings for 1996, 1998, and 2000 are averaged, with the 1996 rating given a triple weight to take into account earlier years.

Political stability. A composite series calculated by Kaufmann, Kraay, and Mastruzzi (2003). Ratings for 1996, 1998, and 2000 are averaged, with the 1996 rating given a triple weight.

Proportional representation in the lower parliamentary house. Data are from Persson and Tabellini (2003. 84-87).

Rule of law. A composite series calculated by Kaufmann, Kraay, and Mastruzzi (2003). Data for 1996, 1998, and 2000 are averaged, with the 1996 rating given a triple weight.

Voice in, and accountability, of government. A composite series calculated by Kaufmann, Kraay, and Mastruzzi (2003). Ratings for 1996, 1998, and 2000 are averaged, with the 1996 rating given a triple weight.

Social

Gender inequality. The gender empowerment measure from United Nations Development Programme (1998. pp. 134-35) for the mid-1990s.

Ethnic heterogeneity. This series is one minus a Herfindahl index of the shares of each ethnic group, in most cases for the 1990s. Data are from Alesina et al. (2003).

Linguistic heterogeneity. This series is one minus a Herfindahl index of the shares of people speaking each languages in 2001. Data are from Alesina et al. (2003).

Religious heterogeneity. This series is one minus a Herfindahl index of the shares of people with each religion in 2001. Data are from Alesina, et al. (2003).

Social/power hierarchy. A psychological measure of the social distance between people with different degrees of power. Data are from by Hofstede (2001: p. 500), using a 1967-73 sample.

Other

Historically Protestant. Percentage of Protestants in 1900 and 1970. A strongly Protestant population was rated 1; but if the population was roughly evenly split between Protestant and non-protestant in the two years, the rating was 0.5. Data are from Barrett (1982).

Population size. Logarithm of population in 1995. Data are from World Bank (2008).

Population density. People per square kilometer in 1995. Data are from World Bank (2008).

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