

Regulatory Affairs Office



**KOSOVO ENERGY CORPORATION J.S.C.**

**TARIFF APPLICATION  
YEAR 2012**

**Part I – Baseline Information for all Licensees**

**Regulatory Asset Base and  
Weighted Average Cost of Capital  
At 01 January 2012**

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## **I. Introduction**

The Kosovo Energy legislation was revised in December 2010 and called for ERO to amend its secondary legislation to conform to the new laws. In November 2011, ERO issued its new Pricing Rules for each licensed activity as follows:

- Rule on Regulated Generator Pricing
- Rule on Rule on Transmission System Operator and Market Operator Pricing
- Rule on Distribution System Operator Pricing
- Rule on Public Electricity Supplier Pricing

The new Pricing Rules result in a significant change in the manner in which tariffs are initially developed and subsequently modified in future years. KEK has spent significant time studying and commenting on the various consultation materials leading up to the issuance of the final pricing rules in November 2011. In addition, KEK has extensively studied the final rules in order to prepare this tariff application and the supporting documentation to comply with the new rules.

In order to comply with the new unbundled pricing mechanisms being implemented by ERO, the 2012 KEK Tariff Application will consist of five (5) parts as follows:

### **Part I Baseline Information for all Licensees**

This part will lay the foundation for the Generation, Distribution Network, and Public Supplier tariff applications. It will document KEK's compliance with the new pricing rules as far as the starting point for the Regulatory Asset Base and Weighted Average Cost of Capital are concerned

### **Part II Regulated Generator Tariff Application**

This part will contain the tariff application for KEK Generation (Kosovo A and B) and lay the foundation for the determination of the Wholesale Energy price.

### **Part III Wholesale Electricity Price for 2012**

This part will utilize the information from the 2012 energy balance and the Generation Tariff to determine the 2012 Wholesale Energy price, along with information concerning the estimated cost of imports, purchases from other domestic generators, and exports. The wholesale energy price is critical input for the Distribution Use of System Tariffs and the retail tariffs of the Public Supplier.

### **Part IV Distribution Use of System Tariff Application**

This will be the tariff application for KEK Network in which the Allowed Revenues will be proposed, using the Wholesale Energy price to determine the cost of technical and commercial losses. The Distribution Use of System (DUOS) Tariffs will also be developed for ERO review and approval

### **Part V Public Electricity Supplier Tariff Application**

The Public Supplier requires inputs from the other Licensees in order to develop proposed retail tariffs. Using the Wholesale Energy Price, the Transmission Fees, and the DUOS

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Tariffs, along with a determination of its own retail costs, the Public Supplier will be able to determine total Allowed Revenues for retail tariffs and then propose the pricing by tariff class to recover those allowed revenues.

This part of the application (Part I) lays the foundation for the other parts by addressing two critical components for tariff development, Regulatory Asset Base (RAB) and Weighted Average Cost of Capital (WACC). Since the new energy legislation and the resulting pricing rules significantly redefined the RAB by including pre 2006 assets and by escalating the RAB in future years by an inflation factor, it is critical to have a well documented starting point for RAB as of the end of 2011.

The WACC used for the 2007 through 2011 tariff reviews was basically the value determined in 2006 when the prior tariff methodology was developed. KEK has performed the analyses called for in the new pricing rules to determine WACC for Mining, Generation, Network, and Supply as required.

Having the RAB and WACC base values documented in this part will eliminate significant repetition in the other parts of the application.

KEK respectfully requests that the ERO review this part of the KEK tariff application as soon as possible in order that the 2012 tariff process can move along in time to implement a retail adjustment on 01 April 2012. The process is already behind the time schedule outlined in the pricing rules. As of early January 2012, ERO had not yet issued a specific schedule for licensees to file their 2012 tariff applications. Since the Generation Pricing Rule states that: "The Regulator shall initiate the Periodic Review no later than 120 Business Days prior to start of the forthcoming Regulatory Period", there are now less than 90 days until the regulatory period begins on 01 April. KEK is, therefore, also submitting its tariff application for the Public Generator (Part II of the application) along with this document. Approval of a generation tariff, and subsequently the wholesale energy price, are critical to the DSO, TSO, and Public Supplier tariff applications.

## **II. Determination of the Regulatory Asset Base at 01 January 2012 by Licensed Activity**

The purpose of this section is to document the Regulatory Asset Base (RAB) of KEK and its four operating entities (Mine, Generation, Network, and Supply) as of 31 December 2011 in accordance with the new pricing rules.

Since the pre 2006 assets are being included in the RAB for the first time, the starting point was the Audited Financial Statements of KEK for the year 2005. The data elements needed to determine RAB include the following:

- Cost of Assets at a point in time (in this case 31 December 2005)
- Accumulated Depreciation at a point in time (in this case 31 December 2005)
- Annual Depreciation for each year
- Additions to fixed assets each year
- Retirement of Fixed Assets each year
- Transfers or other adjustments
- Grants at a point in time (in this case 31 December 2005)
- Grants received each year
- Amortization of grants for each year

It should be noted that the fixed assets were revalued at the time when KEK was converted to a Joint Stock Company in 2005 and impairment adjustments were made subsequent to that time. The values of assets in this document are based on the 2005 revaluation and are stated net of impairment adjustments in this document.

Using the 31 December 2005 values from the 2005 audited financial statements as the starting point; the 2006 through 2010 audited financial statements were utilized to determine all activity and data elements from the list above for those years. The results of that analysis are shown in Table 1.

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**Table 1 - KEK Fixed Asset and Grant Information 2005 - 2010**

Source: Audited Financial Statements  
(Thousands of Euros)

<b>I. FIXED ASSET INFORMATION</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
<b><u>Beginning of Year:</u></b>						
Cost		342,757	333,103	360,945	406,044	484,974
Accumulated Depreciation		107,303	122,171	148,281	170,310	179,576
Net		235,454	210,932	212,664	235,734	305,398
<b><u>Activity During the Year</u></b>						
Additions: Non Grant Funded		4,076	2,816	16,892	82,818	108,833
Grant Funded		21,566	25,189	28,694	0	0
Disposals: Cost		103	68	487	1,251	1,708
Accum Depr			97	347	1,141	1,404
Transfers: Cost		(34,981)			(42)	
Accum Depr		(11,969)				
Adjustments		(212)	(95)			
Depreciation		26,837	26,207	22,376	23,546	29,092
Correction (Cost)					(2,595)	
Correction (Acc Depr)					(13,139)	
<b><u>End of Year</u></b>						
Cost	342,757	333,103	360,945	406,044	484,974	592,099
Accumulated Depreciation	107,303	122,171	148,281	170,310	179,576	207,264
Net	<b>235,454</b>	<b>210,932</b>	<b>212,664</b>	<b>235,734</b>	<b>305,398</b>	<b>384,835</b>
<b>II. GRANT INFORMATION</b>						
Beginning of Year		14,704	32,565	62,554	118,893	126,305
Additions		21,566	25,189	28,694		
Transfers		(1,904)	7,830	24,130		12,940
Corrections		(824)		7,686	1,482	
OPEX Related					10,515	
Amortiation		977	3,030	4,171	4,585	5,034
<b>End of Year</b>	<b>14,704</b>	<b>32,565</b>	<b>62,554</b>	<b>118,893</b>	<b>126,305</b>	<b>134,211</b>

Data Sources: Fixed Asset information from Property, Plant and Equipment table in Footnote #4 of Audited Financial Statements

Grant information from Deferred Grant footnote in the Audited Financial Statements (number 10 or 11 or 12 depending on the year)

Annual Audited Financial Statements have been provided to ERO and are available to others upon request.

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For the year 2010, the external independent auditor also issued unbundled financial statements for the four operating units of KEK as follows:

- Mine
- Generation
- Network
- Supply

Using the year end 2010 information from Table 1, the RAB as of 31 December 2011 is shown in Table 2

**Table 2.KEK Fixed Asset and Grant Information - Unbundled as of 31 December 2010**

Source: 2010 Audited Unbundled Financial Statements  
(Thousands of Euros)

	<b>Mine</b>	<b>Generation</b>	<b>Network</b>	<b>Supply</b>	<b>TOTAL KEK</b>
<b>REGULATORY ASSET BASE</b>					
Cost	193,191	247,905	147,000	3,992	592,088
Accumulated Depreciation	<u>42,547</u>	<u>97,646</u>	<u>64,983</u>	<u>2,090</u>	<u>207,266</u>
<b>Net RAB</b>	<b>150,644</b>	<b>150,259</b>	<b>82,017</b>	<b>1,902</b>	<b>384,822</b>
<b>GRANTS (NET)</b>					
Less OPEX Grant for Imported Power (Note 1)	68,716	30,095	24,537	10,863	134,211
				(10,515)	(10,515)
<b>Grants Related to Fixed Assets</b>	<b>68,716</b>	<b>30,095</b>	<b>24,537</b>	<b>348</b>	<b>123,696</b>
<b>RAB FOR RETURN CALCULATION (Note 2)</b>	<b>81,928</b>	<b>120,164</b>	<b>57,480</b>	<b>1,554</b>	<b>261,126</b>

Notes:

- (1) This is an obvious error in the financial statements since the € 10.5 million is a grant for OPEX, not CAPEX
- (2) The fixed asset related data for Headquarters (Cost, Accumulated Depreciation, etc) is allocated to the 4 operating units based on number of personnel, consistent with the treatment by ERO in prior years

Using the audited data as a starting point, the RAB as of year-end 2011 was developed by including the estimated activity for the year 2011 including 2011 capital expenditures, transfers from work in progress, depreciation, grant amortization, etc as shown in Table 3. It should be noted that the 2011 capital expenditures are estimates as of mid December 2011. They indicate that the expenditures will be lower than those included in the 2011 tariff application.

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**Table 3 KEK Fixed Asset and Grant Information Unbundled as of 31 December 2011**

		2011 Capital Expenditures Estimated as of 20 Dec 2011 (Thousands of Euros)				<b>TOTAL</b>
		<b>Mine</b>	<b>Generation</b>	<b>Network</b>	<b>Supply</b>	<b>KEK</b>
<b>REGULATORY ASSET BASE</b>						
<b>Beginning of Year:</b>						
Cost		193,191	247,905	147,000	3,992	592,088
Accumulated Depreciation		<u>42,547</u>	<u>97,646</u>	<u>64,983</u>	<u>2,090</u>	<u>207,266</u>
Net RAB		<b>150,644</b>	<b>150,259</b>	<b>82,017</b>	<b>1,902</b>	<b>384,822</b>
<b>Activity During 2011: (Estimated as of 20 Dec 2011)</b>						
Additions	CAPEX Direct	36,000	20,500	13,400	440	70,340
	HQ Allocation	1,000	500	400	400	2,300
Transfer from Work in Progress		50,179				50,179
Disposals						
Depreciation Expense		9,471	16,150	5,130	882	31,634
	Asset Life (years)	25	16	30	5	
<b>End of Year</b>						
Cost		280,370	268,905	160,800	4,832	714,907
Accumulated Depreciation		52,018	113,796	70,113	2,972	238,900
Net RAB		<b>228,352</b>	<b>155,109</b>	<b>90,687</b>	<b>1,860</b>	<b>476,007</b>
<b>GRANTS (NET)</b>						
Beginning of Year		68,716	30,095	24,537	10,863	134,211
Audit Adjustment (Note 1)		(13,097)	346	4,766	382	(7,603)
Correction of error in 2009 (OPEX Grant)					(10,515)	(10,515)
Restated Beginning of Year		55,619	30,441	29,303	730	116,093
Additions		0	0	0	0	0
Amortization		2,225	1,903	977	146	5,250
<b>End of Year</b>		<b>53,394</b>	<b>28,538</b>	<b>28,326</b>	<b>584</b>	<b>110,843</b>
<b>RAB FOR RETURN CALCULATION</b>		<b>174,958</b>	<b>126,570</b>	<b>62,361</b>	<b>1,276</b>	<b>365,164</b>

Note 1: The Audit adjustment in 2011 is based on information from the new Asset Register that records grants for each asset

In the tariff applications for the Regulated Generator, DSO, and Public Supplier, the 01 January 2012 values for RAB from Table 3 will be used.



### **III. Determination of the Weighted Average Cost of Capital at 01 January 2012 by Licensed Activity**

#### **a) Purpose**

The Purpose of Section III is to specify the manner in which KEK will comply with the new ERO tariff methodology as far as the determination of Weighted Average Cost of Capital (WACC) is concerned. This section utilizes the RAB information in Section II for each of the KEK operating divisions.

#### **b) Background**

The Weighted Average Cost of Capital, which must be determined for each licensed activity, is defined as follows by ERO:

$$WACC = (1 - g) * (rE) / (1 - t) + g * (rD)$$

Where:

WACC	is the Weighted Average Cost of Capital
g	gearing (debt: debt + equity ratio)
rE	real cost of equity (expressed as a %)
rD	real cost debt (expressed as a %)
t	Kosovo corporate income tax rate

#### **c) Defining the Capital Structure**

The first step in the process is the determination of the Capital Structure of the individual Licensee. Since each licensee is not a stand-alone corporate entity, the only practical approach is to define the Capital Structure of the Licensee as follows:

$$\text{Total Long Term Capital} = \text{Regulatory Asset Base net of grants}$$

This is a rational approach since the WACC will be applied to the Regulatory Asset Base (RAB) excluding grants.

The Licensee is assumed to have a simplified capital structure consisting of debt and equity. The level of debt at a point in time will be determined based on the actual amount of long term debt outstanding at that time. For example, the debt outstanding at the beginning of 2012 will be based on actual borrowings as of 31 December 2011.

The equity component of the capital structure is the difference between the RAB (net of grants) and the debt outstanding.

The Regulatory Asset Base at 31 December 2011 for each operating unit is shown in Table 4 below. Documentation of the information was provided in section II of this report. The RAB includes the pre 2006 assets and is net of grants as required by the ERO tariff methodologies. It is subject to correction once the actual 2011 capital expenditures are known. An estimate was

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provided in mid December 2011 which already reflects that the 2011 capital expenditures will be lower than the budgeted amount used in the last tariff review process. The long term debt outstanding by operating unit is subtracted from the RAB to determine equity for the division.

**Table 4 – Regulatory Asset Base and Capital Structure by Operating Unit**

<b>KEK Capital Structure - Unbundled</b>					
<b>As of 31 December 2011</b>					
(Thousands of Euros)					
	Mine Generation	Network	Supply	TOTAL KEK	
<b>Regulatory Asset Base</b>	174,958	126,570	62,361	1,276	365,164
<b>Total Long Term Debt Outstanding</b>	151,387	26,153	0	0	177,540
<b>Equity Component of Capital Structure</b>	23,571	100,417	62,361	1,276	187,624
Equals RAB less Portion Financed with Debt					
<b>Total Capital Structure</b>	174,958	126,570	62,361	1,276	365,164
Gearing (Debt as % Total Capital)	0.865	0.207	0.000	0.000	0.486

The debt information for all long term loans outstanding at 31 December 2011 is shown in Table 5. The values include all drawdowns through the end of 2011, since they were made prior to the date of this document.

**Table 5 – Debt Outstanding by Issue at 31 December 2011**

<b>Long Term Debt at 31 December 2011</b>			
(Euros in thousands)			
	Principle	Int Rate	Weighted Cost
<b><u>Mines:</u></b>			
Sibovic SW Loan #1	75,000	7.43%	3.68%
Sibovic SW Loan #2	58,445	6.00%	2.32%
Sibovic SW Loan #3	17,942	6.00%	0.71%
	<b>151,387</b>		<b>6.71%</b>
<b><u>Generation:</u></b>			
Rehabilitation of A5	9,400	7.43%	2.67%
Rehabilitation of B1 & B2	5,400	6.00%	1.24%
Refurbishment B1 & B2	11,353	6.00%	2.60%
	<b>26,153</b>		<b>6.51%</b>
<b>Composite Cost of Debt</b>	<b>177,540</b>		<b>6.68%</b>

**d) Determining the Value for Gearing (g)**

ERO defines gearing as debt divided by total long term capital (debt + equity). The gearing at 31 December 2011 (based on the values from Table 4) is:

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Mine	0.865
Generation	0.207
Network	0.000
Supply	0.000
KEK Composite	0.486

ERO should not impute a theoretical gearing at 31 December 2011 different than the actual values above. Going forward to year 2012, there are some funds remaining to be drawn down on one of the loans for the mine. Those can be factored into the 2012 capital structure. Going forward, five of the outstanding loans will require principle repayment in 2012. Those loans will require 16 equal semiannual principle payments commencing in January 2012. Those must be factored into the capital structure for 2012 and subsequent years.

The Government has made it very clear that no more loans will be provided to KEK. The result is that there will be zero gearing for Network and Supply going forward in the near term. This situation may change significantly after privatization.

### e) Determining the Cost of Debt

The cost of debt at 31 December 2011 in nominal terms (Table 5) is:

- 6.71% for the Mines
- 6.51% for Generation

Since the ERO utilizes “real” as opposed to “nominal” debt costs, the above values must be adjusted. Since a real rate cannot be directly observed, it is often approximated as:

$$\text{Real rate} = \text{Nominal rate} - \text{Inflation rate}$$

Since the inflation rate used throughout the tariff methodology is the “Harmonised Indices of Consumer Prices (HICPs) – All Items, for the Eurozone”, that would be the appropriate rate to use. For 12 months ended November 2011 (the latest available), the value is 3.0%.

The Real cost of Debt at 31 December 2011 is, therefore, 3.71% for the Mines and 3.51% for Generation. The composite cost in real terms is 3.68%.

In the Excel workbook showing sample calculations of MAR that ERO provided to KEK on 14 December 2011, a “Small Company Premium” of 50 basis points (0.5%) was added to the cost of debt. Such a premium may be appropriate if debt costs were being forecasted. Since actual cost of debt is being used in this paper, such an adjustment is not necessary.

### f) Determining the Cost of Equity

ERO specifies that the cost of equity be determined using the following formula:

$$rE = Rf + \beta*(ERP) \quad \text{where } ERP = (Rm - Rf)$$

where:

- rE real return on equity
- Rf real risk free rate
- Rm market equity risk premium (investing in the market as a whole)

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ERP equity risk premium

$\beta$  Beta is the coefficient representing the individual stock risk relative to the market risk

*Note:  $R_m$  as defined by ERO (above) is misleading. It should be defined as the return on the equity market. ERP is the “premium” above the risk free rate*

### **Risk Free Rate:**

The risk free rate for Kosovo ( $R_f$ ) is composed of two elements; the risk free rate in mature markets plus a country risk premium.

Appendix A displays the yields on Government Bonds (Sovereign Debt) as of 09 December 2011. Focusing on the yields for longer term debt (2021 maturities), the following picture emerges:

- The very strong countries (e.g. UK and Germany) have debt costs of about 2.1%
- Highly developed countries with relatively high credit ratings (e.g. Austria and France) have costs of approximately 3.3%
- The countries in financial distress have significantly higher debt costs:
  - Ireland 8.9%
  - Italy 6.9%
  - Portugal 13.2%
  - Spain 5.8%

Based on the above information, it is obvious that a country such as Kosovo with no international credit rating and an extremely poor economic situation would have a nominal risk free rate of no less than 10%. Given that the inflation rate is approximately 3%, a reasonable value for  $R_f$  is 7% in real terms.

### **Equity Risk Premium**

Equity Risk Premium (ERP) varies over time based on a variety of factors. It is, therefore, necessary to look at this factor over a long period of time. Appendix B contains information on the ERP for a variety of countries and over long time periods. The first table in the appendix indicates that the mean return on US stocks (from 1928 – 2010) was 11.3% while the return on US Treasury Bonds was 5.3%, indicating an ERP of 6%

The third table in Appendix B contains information on the ERP in a variety of countries (Stocks minus long term governments – arithmetic mean). The values fall in a very wide range from 3.4% to 9.2%. Based on that information the value of 6% for ERP again looks reasonable.

**Beta**

Beta is a measure of the risk of an individual stock in relation to the market in which is traded. In Kosovo, there is no market; therefore, this variable must be estimated. As ERO correctly pointed out in its Consultation Paper on WACC, Beta values for utilities in developed countries are normally less than 1.0. Given the significant risk in the Kosovo power sector (lack of rule of law, high levels of theft, poor payment discipline, low levels of affordability, high concentration of poor households, etc.), Kosovo utilities have significant unsystematic (industry) risk which must be considered in a licensee specific Beta value. In developed countries, utilities generally have low industry risk indicated by Beta values less than or equal to one. The exception is merchant power plants which have Beta values significantly greater than 1 based on their relatively high risk levels. In Kosovo, the risk in the power sector is significantly higher than in developed countries. A Beta value higher than 1.0 is quite easy to justify, however, given the lack of any hard data, a value of 1.0 is recommended by KEK at this time.

**Cost of Equity**

Based on the information from the prior sections, we can determine a cost of equity for KEK as follows:

$$rE = Rf + \beta*(ERP)$$

$$\text{where: } Rf = 7\%$$

$$\beta = 1.0$$

$$ERP = 6\%$$

$$\text{Real Cost of Equity (rE)} = 7\% + 1.0 * 6\% = 13\%$$

In the Excel workbook showing sample calculations of MAR that ERO provided to KEK on 14 December 2011, a “Small Company Premium” of 100 basis points (1.0%) was added as an additional component of the cost of equity above the amount based on the formulas shown in the pricing rules. In the event that ERO wants to revise the pricing rules to include the small company premium in the cost of equity, the real cost of equity would be 14% (13% above plus 1%).

**g) Weighted Average Cost of Capital by Division**

Table 6 shows the resulting WACC for each of the KEK operating divisions as of 31 December 2011. This will be used as the basis for the WACC in the tariff applications for the Public Generator, Distribution System Operator, and Public Supplier.

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**Table 6 Weighted Average Cost of Capital by Division  
At 31 December 2011**

<b>WEIGHTED AVERAGE COST OF CAPITAL BY DIVISION</b>					
	$WACC = (1 - g) * (rE) / (1 - t) + g * (rD)$				
	<b>Mine</b>	<b>Generation</b>	<b>Network</b>	<b>Supply</b>	<b>Composite KEK</b>
Gearing (g)	0.865	0.207	0.000	0.000	0.486
Return on Equity (rE)	13.00%	13.00%	13.00%	13.00%	13.00%
Cost of Debt (rD)	3.71%	3.51%	0	0	3.68%
Tax Rate (t)	10%	10%	10%	10%	10%
<b>WACC</b>	<b>5.2%</b>	<b>12.2%</b>	<b>14.4%</b>	<b>14.4%</b>	<b>9.21%</b>

NOTE: In the event that ERO decides to include a Small Company Premium of 100 basis points (1%) in the cost of equity, the WACC for each of the units above would be:

Mine	5.3%
Generation	13.1%
Network	15.6%
Supply	15.6%
Composite KEK	9.8%

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APPENDIX A

Government Debt Cost as of 09 December 2011

Source: Financial Times

<b>BONDS - BENCHMARK GOVERNMENT</b>								
Dec 9	Red Date	Coupon	Bid Price	Bid Yield	Day chg yield	Wk chg yield	Month chg yld	Year chg yld
Australia	12/13	5.50	104.59	3.12	-0.02	-0.14	-0.54	-1.91
	05/21	5.75	114.72	3.87	-0.05	-0.20	-0.43	-1.76
Austria	10/13	3.80	104.78	1.17	0.12	-0.06	0.16	-0.05
	09/21	3.50	101.83	3.28	0.02	-0.01	0.25	-0.10
Belgium	09/13	4.25	101.61	3.30	-0.07	-0.32	0.58	1.76
	09/21	4.25	97.92	4.52	0.10	-0.20	0.21	0.53
Canada	02/14	1.00	100.21	0.90	0.01	-0.05	-0.07	-0.78
	06/21	3.25	110.12	2.07	0.01	-0.08	-0.11	-1.19
Denmark	11/13	5.00	108.89	0.35	0.06	0.06	-0.39	-0.94
	11/21	3.00	108.30	2.07	0.04	0.22	0.03	-1.05
Finland	07/13	5.38	107.57	0.48	0.04	0.06	-0.03	-0.53
	04/21	3.50	106.69	2.68	0.03	0.00	0.40	-0.54
France	07/13	4.50	105.62	0.90	0.00	-0.10	-0.13	-0.31
	07/16	2.50	101.20	2.22	0.10	0.16	0.15	-0.01
	10/21	3.25	99.77	3.28	0.08	0.17	0.12	-0.08
	04/41	4.50	112.44	3.79	-0.05	-0.08	-0.20	-0.09
Germany	12/13	0.25	99.85	0.33	0.03	0.02	-0.12	-0.67
	10/16	1.25	101.07	1.02	0.01	-0.03	0.08	-0.94
	01/22	2.00	98.69	2.15	0.05	-0.03	0.34	-0.88
	07/42	3.25	112.37	2.65	0.05	-0.14	-0.02	-0.82
Greece	05/14	4.50	20.59	105.01	1.99	5.59	30.62	91.81
	10/22	5.90	21.81	32.62	-3.75	0.50	-0.19	20.84
Ireland	04/16	4.60	86.25	8.50	-0.07	-0.52	0.26	1.12
	10/20	5.00	76.72	8.91	0.04	-0.24	-	-
Italy	11/13	2.25	93.24	6.20	0.62	-0.33	-0.36	3.74
	09/16	4.75	92.29	6.78	0.52	-0.15	-0.21	3.32
	03/22	5.00	87.33	6.85	0.30	0.06	0.05	2.26
	09/40	5.00	77.97	6.86	0.16	-0.11	-0.50	1.50
Japan	12/13	0.20	100.13	0.14	-	-0.01	-	-0.08
	09/16	0.30	99.78	0.35	-0.01	-0.02	0.01	-0.16
	12/21	1.10	100.77	1.02	-0.04	-0.07	0.03	-0.22
	09/31	1.70	98.96	1.77	-0.02	-0.06	0.02	-0.32
Netherlands	07/13	4.25	106.09	0.39	-0.01	0.02	-0.20	-0.54
	07/21	3.25	105.98	2.54	0.01	0.00	0.33	-0.66
New Zealand	04/13	6.50	105.29	2.45	-0.03	-0.15	-0.33	-1.71
	05/21	6.00	116.12	3.94	-0.07	-0.18	-0.45	-1.88
Norway	05/15	5.00	112.00	1.38	0.02	0.02	-0.51	-1.36
	05/21	3.75	111.15	2.41	-0.03	-0.08	-0.17	-0.88
Portugal	09/13	5.45	83.72	16.74	1.29	-1.78	-2.84	12.52
	04/21	3.85	51.47	13.17	0.31	-0.65	1.34	6.88
Spain	10/13	2.50	96.07	4.73	0.23	-0.04	0.35	1.34
	04/21	5.50	98.03	5.77	0.30	0.00	0.07	0.53
Sweden	05/14	6.75	113.91	0.85	-0.04	-0.06	-0.31	-0.88
	06/22	3.50	117.56	1.66	-0.05	-0.14	-0.08	-1.55
Switzerland	02/13	4.00	104.72	-0.07	-0.09	-0.08	-0.12	-0.57
	04/21	2.00	111.26	0.75	-0.04	-0.12	-0.12	-1.01
UK	03/13	4.50	105.05	0.40	-0.01	-0.07	-0.15	-0.32
	01/17	1.75	103.23	1.10	0.20	0.09	-0.06	-1.12
	09/21	3.75	113.90	2.16	-0.07	-0.09	-0.11	-1.39
	12/40	4.25	118.97	3.24	0.00	0.06	-0.02	-1.22
US	11/13	0.25	100.05	0.23	-0.01	-0.04	-0.02	-0.39
	11/16	0.88	99.96	0.88	0.00	-0.09	-0.03	-0.97
	11/21	2.00	99.53	2.05	0.03	-0.06	-0.01	-1.19
	11/41	3.13	100.59	3.09	0.05	-0.04	-0.03	-1.36

London close.

Source: ThomsonReuters

Yields: Local market standard Annualised yield basis. Yields shown for Italy exclude withholding tax at 12.5 per cent payable by non residents.

**INFORMATION ON EQUITY RISK PREMIUMS***Summary Statistics- U.S. Stocks, T.Bills and T. Bonds- 1928-2010*

	<i>Stocks</i>	<i>T. Bills</i>	<i>T. Bonds</i>
Mean	11.31%	3.70%	5.28%
Standard Error	2.22%	0.33%	0.85%
Median	14.22%	3.23%	3.61%
Standard Deviation	20.21%	3.04%	7.74%
Kurtosis	290.17%	383.22%	462.34%
Skewness	-39.27%	94.55%	106.29%
Minimum	-43.84%	0.03%	-11.12%
Maximum	52.56%	14.30%	32.81%
25th percentile	-1.67%	1.09%	1.20%
75th percentile	26.10%	5.54%	8.54%

*Risk Premiums for non-US Markets: 1976- 2001*

<i>Country</i>	<i>Weekly average</i>	<i>Weekly standard deviation</i>	<i>Equity Risk Premium</i>	<i>Standard error</i>
Canada	0.14%	5.73%	1.69%	3.89%
France	0.40%	6.59%	4.91%	4.48%
Germany	0.28%	6.01%	3.41%	4.08%
Italy	0.32%	7.64%	3.91%	5.19%
Japan	0.32%	6.69%	3.91%	4.54%
UK	0.36%	5.78%	4.41%	3.93%
India	0.34%	8.11%	4.16%	5.51%
Korea	0.51%	11.24%	6.29%	7.64%
Chile	1.19%	10.23%	15.25%	6.95%
Mexico	0.99%	12.19%	12.55%	8.28%
Brazil	0.73%	15.73%	9.12%	10.69%



## Regulatory Affairs Office

### *Historical Risk Premiums across Equity Markets – 1900 – 2010 (in %)*

Country	Stocks minus Short term Governments				Stocks minus Long term Governments			
	Geometric Mean	Arithmetic Mean	Standard Error	Standard Deviation	Geometric Mean	Arithmetic Mean	Standard Error	Standard Deviation
Australia	6.7%	8.3%	1.7%	17.6%	5.9%	7.8%	1.9%	19.8%
Belgium	2.9%	5.5%	2.3%	24.7%	2.5%	4.9%	2.0%	21.4%
Canada	4.2%	5.6%	1.6%	17.2%	3.7%	5.3%	1.7%	18.2%
Denmark	2.8%	4.6%	1.9%	20.5%	2.0%	3.4%	1.6%	17.2%
Finland	5.9%	9.5%	2.9%	30.2%	5.6%	9.2%	2.9%	30.3%
France	6.0%	8.7%	2.3%	24.5%	3.2%	5.6%	2.2%	22.9%
Germany*	5.9%	9.8%	3.0%	32.0%	5.4%	8.8%	2.7%	28.4%
Ireland	3.0%	5.3%	2.0%	21.5%	2.9%	4.9%	1.9%	19.8%
Italy	5.8%	9.8%	3.0%	32.0%	3.7%	7.2%	2.8%	29.6%
Japan	5.9%	9.0%	2.6%	27.7%	5.0%	9.1%	3.1%	32.8%
Netherlands	4.2%	6.5%	2.2%	22.8%	3.5%	5.8%	2.1%	22.2%
New Zealand	4.1%	5.7%	1.7%	18.3%	3.8%	5.4%	1.7%	18.1%
Norway	3.0%	5.9%	2.5%	26.5%	2.5%	5.5%	2.7%	28.0%
South Africa	6.2%	8.3%	2.1%	22.1%	5.5%	7.2%	1.9%	19.6%
Spain	3.2%	5.4%	2.1%	21.9%	2.3%	4.3%	2.0%	20.8%
Sweden	4.3%	6.6%	2.1%	22.1%	3.8%	6.1%	2.1%	22.3%
Switzerland	3.4%	5.1%	1.8%	18.9%	2.1%	3.6%	1.7%	17.6%
U.K.	4.3%	6.0%	1.9%	19.9%	3.9%	5.2%	1.6%	17.0%
U.S.	5.3%	7.2%	1.9%	19.8%	4.4%	6.4%	1.9%	20.5%

**Source:**

**Equity Risk Premiums (ERP): Determinants, Estimation and Implications – The 2011 Edition**

*Updated: February 2011*

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