



MINISTRY OF INDUSTRY & TRADE
MONGOLIA

International Copper Study Group 30th Regular Meeting



Current Developments and Future Prospects for the Mongolian Copper Industry

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Ministry of Industry and Trade

1-2 October 2007
Lisbon, Portugal

1. Macroeconomic Indicators

- 2. Foreign Debt**
- 3. ICOR / Investment Efficiency**
- 4. Roles of the Mineral Industry in Mongolian Economy**
- 5. Geological Investigation**
- 6. Strategic Copper Deposits**
- 7. Legal Environment of the Mineral Industry**
- 8. Tax Burden and Elasticity**
- 9. Promised Projects and their Contributions**
- 10. Concluding Remarks**

Macroeconomic Indicators (1)

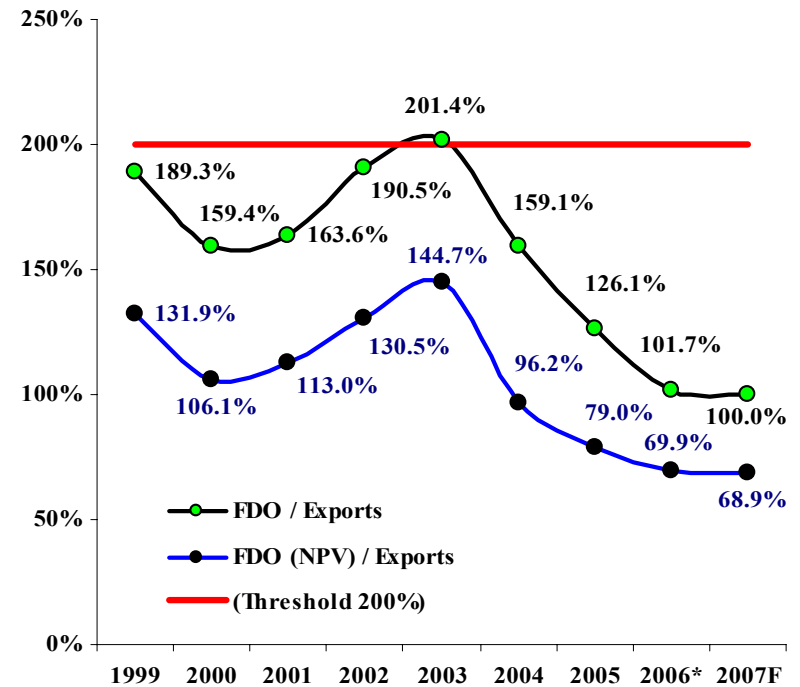
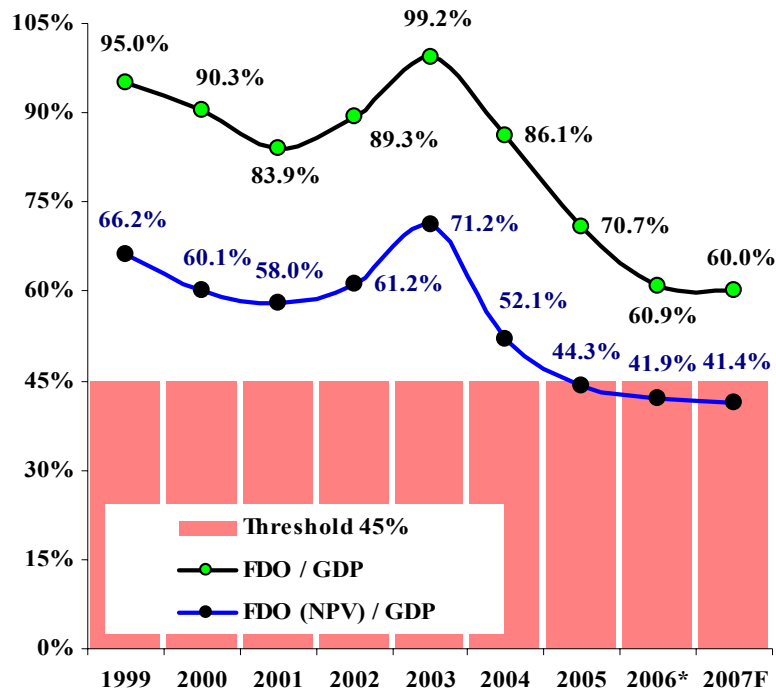
	2003	2004	2005	2006
◆ GDP (mln. USD)	1,290.59	1,641.64	2,094.41	2,689.54
◆ GDP (mln. Tugriks), 2000=100	1,134,519.0	1,256,758.7	1,346,101.9	1,459,029.5
◆ Economic Growth (%)	6.1%	10.8%	7.1%	8.4%
◆ GDP per capita (USD)	515	648	817	1,037
◆ GNI per capita (USD) by World Bank Atlas Methodology	512	661	750	885
● Unemployment Rate (%)	3.5	3.6	3.3	3.2
● Inflation, Annual Average (%)	5.1	8.2	12.7	5.1
● Exchange Rate (1\$US vs ₮)	1,146.51	1,185.19	1,205.27	1,179.55
■ Total Budget Revenues & Grants (mln. USD)	483.11	601.69	695.16	1,153.33
■ Total Budget Expenditures & Net Lending (mln. USD)	537.08	634.91	634.38	1,048.71
■ Total Budget Deficit (mln. USD)	-53.97	-33.22	60.78	104.62
■ % of Budget Deficit/Surplus in GDP (%)	-4.2%	-2.0%	2.9%	3.9%
▶ Currency in circulation (mln. USD)	133.30	142.19	159.04	207.79
of which currency outside banks (mln. USD)	114.69	121.09	126.42	156.98
▶ Money M1 (mln. USD)	185.64	186.74	223.29	281.42
▶ Money M2 (mln. USD)	613.46	714.68	970.85	1,302.64
▶ Reserve Money (mln. USD)	175.14	198.20	233.34	328.22

Macroeconomic Indicators (2)

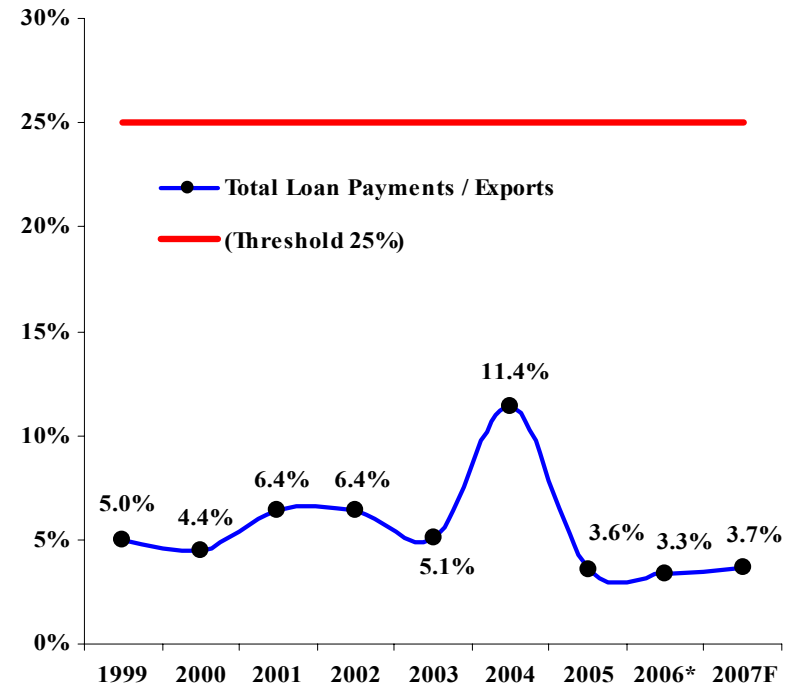
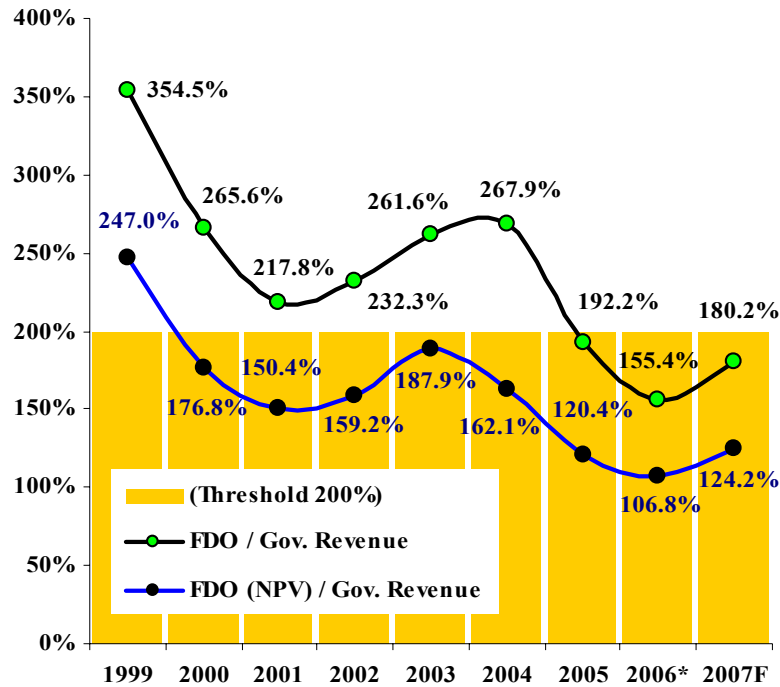
	(mln. USD)			
Foreign Trade	2003	2004	2005	2006
Total Turnover	1,416.9	1,890.8	2,249.2	3,028.4
Exports	615.9	869.7	1,064.9	1,542.8
Imports	801.0	1,021.1	1,184.3	1,485.6
Foreign Trade Balance	-185.1	-151.4	-119.4	57.2
Balance of Payments	2003	2004	2005	2006
Current Account	-98.7	63.4	84.1	321.6
- Goods & Services	-248.7	-194.2	-90.3	193.4
- Net Income	-11.5	-11.1	-50.8	-86.9
- Current Transfers	161.5	268.7	225.2	215.1
Capital & Financial Account	4.9	-23.1	43.4	102.0
- Capital Account	0.0	0.0	0.0	0.0
- Financial Account	4.9	-23.1	43.4	102.0
Net Errors & Omissions	-3.1	-5.7	7.0	0.7
Overall Balance of Payments	-96.9	34.6	134.5	424.3

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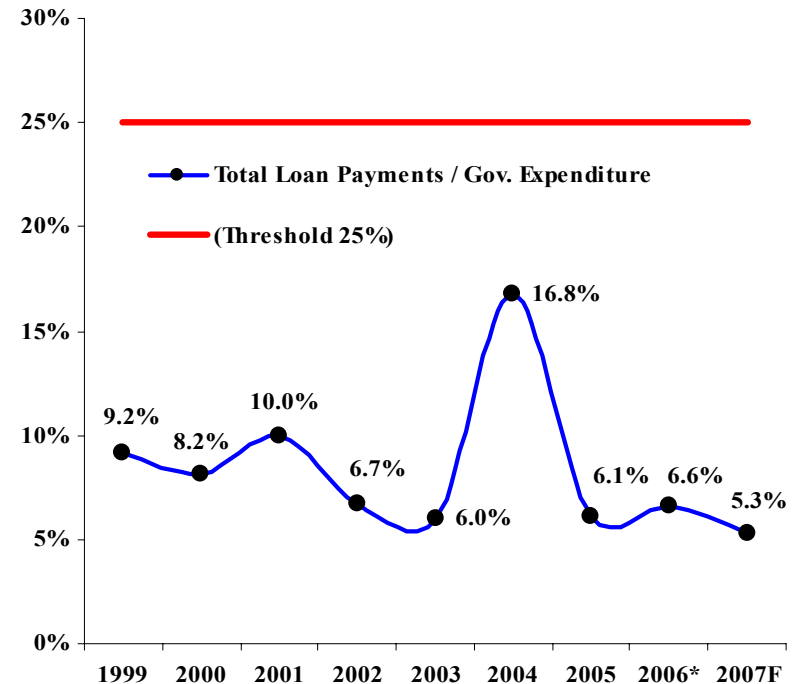
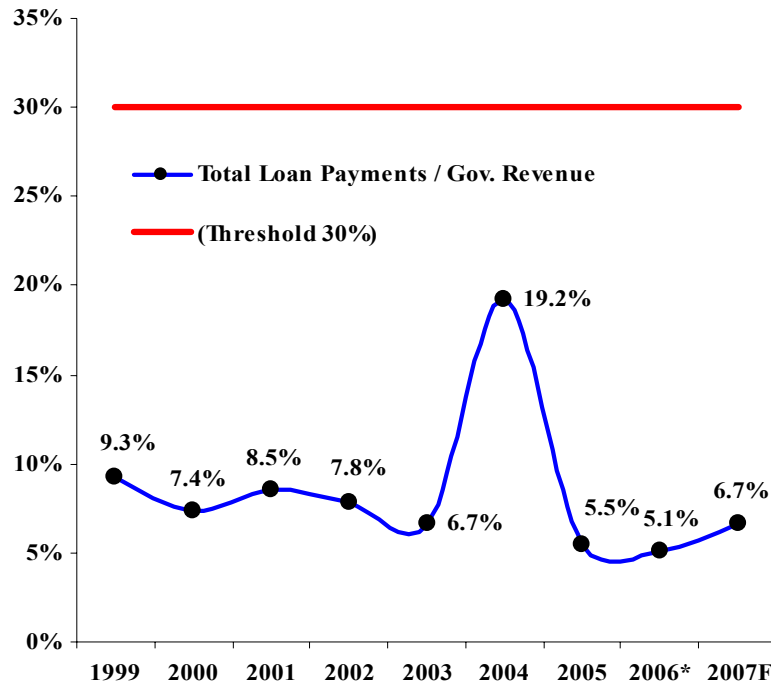
Foreign Debt (1)



Sep 2006 Est.



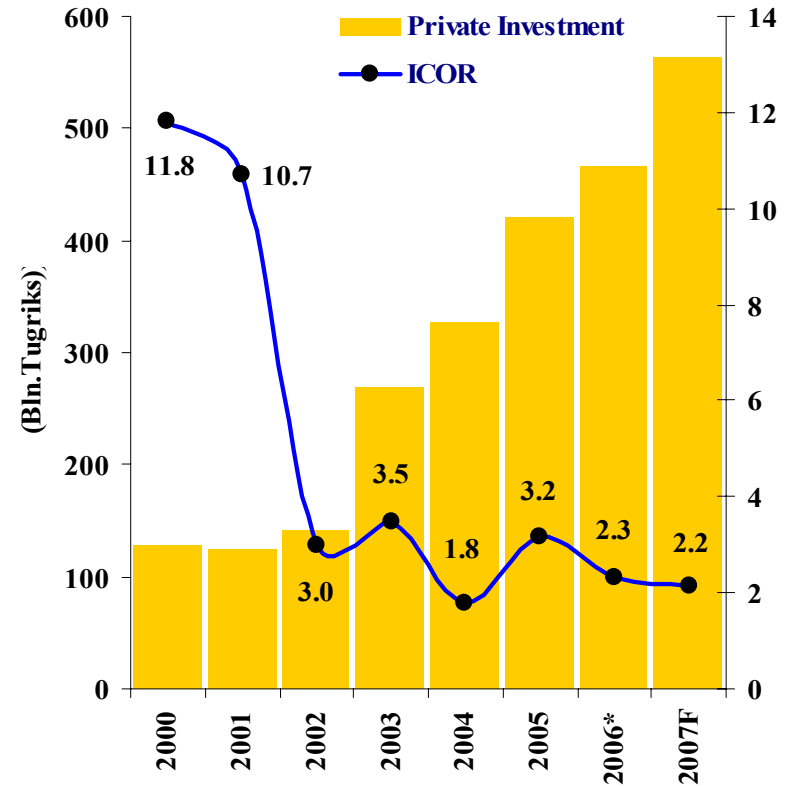
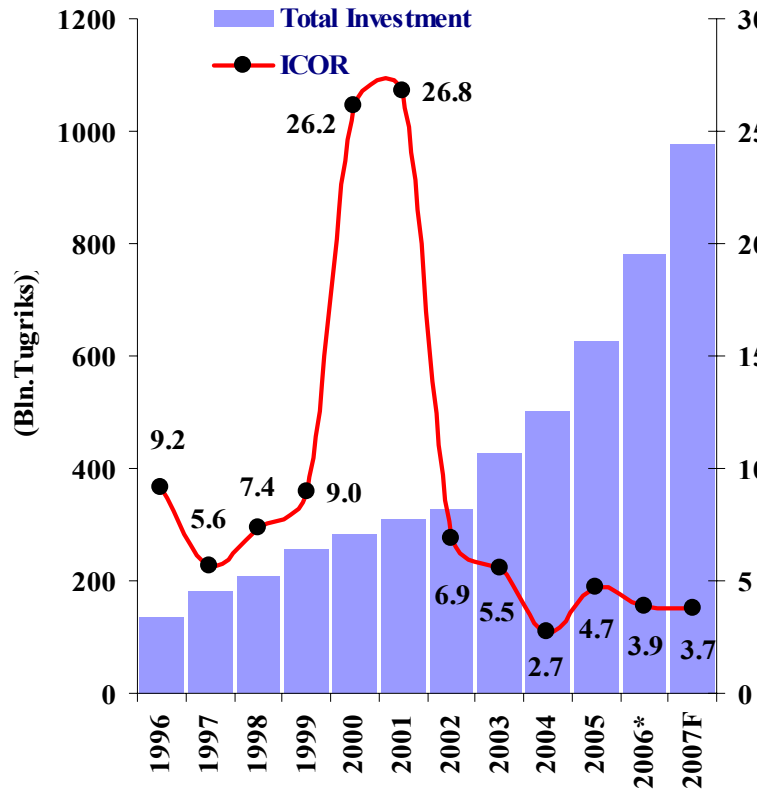
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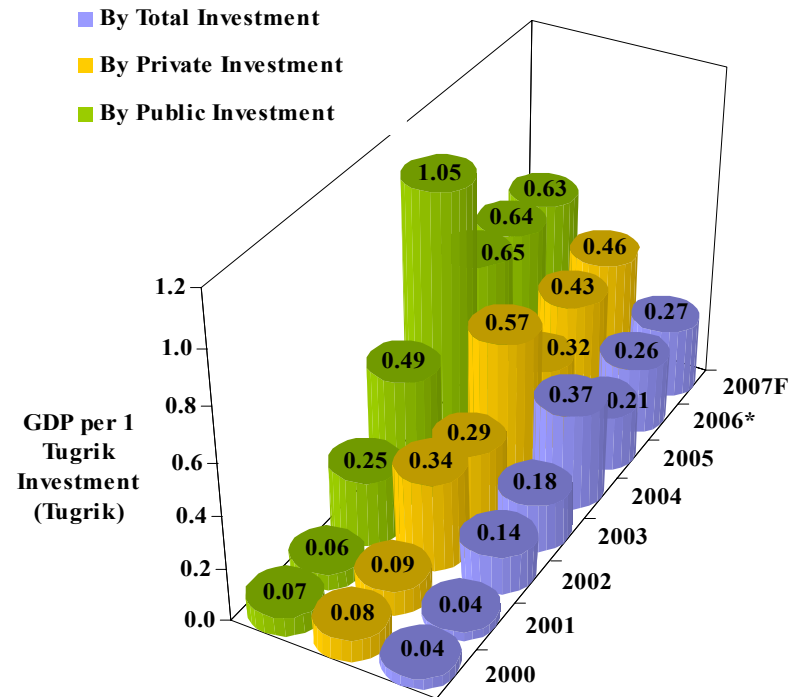
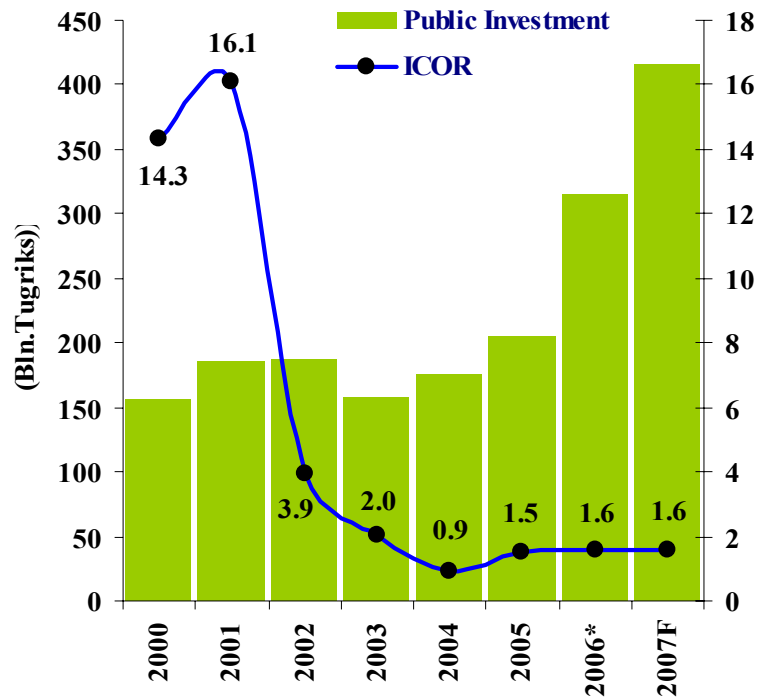
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ICOR by Harrod-Domar Model (I)



Sep. 2006 Est.

ICOR by Harrod-Domar Model (II)



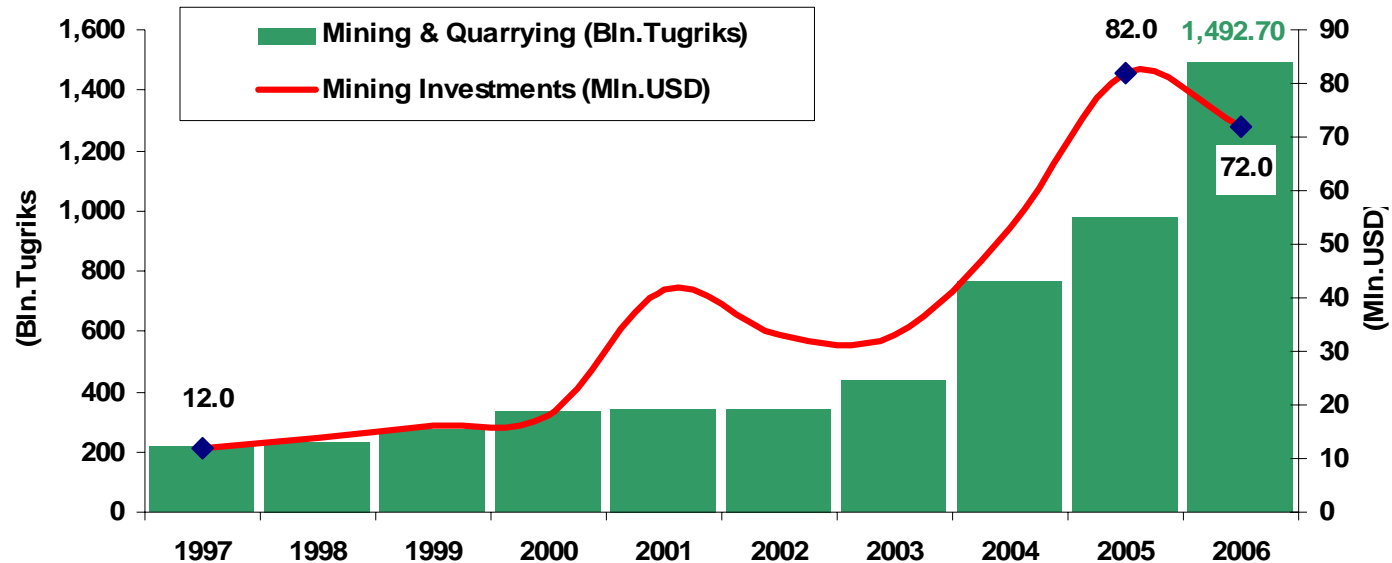
Sep. 2006 Est.

ICOR in Selected Economies

	Period of Time	ICOR	I/ICOR
	2000-2002	16.5	0.06
MONGOLIA	2003-2005	5.2	0.19
	2000-2005	6.1	0.17
	1995-2005	6.7	0.15
CHINA	1991-1995	3.4	0.29
	1996-2000	4.5	0.22
	2001-2003	5.1	0.20
	1991-2003	4.1	0.24
JAPAN	1961-1970	3.2	0.31
SOUTH KOREA	1981-1990	3.2	0.31
TAIWAN	1981-1990	2.7	0.37
RUSSIA	2001-2004	2.8	0.36
SOUTH EAST ASIA (AVG.)	2002	4.6-4.9	0.22-0.20
MIDDLE EAST, NORTHERN AFRICA (AVG.)	2001-2002	6.1	0.16
CENTRAL AFRICA (AVG.)	1999-2002	5.7	0.18
CENTRAL ASIA (AVG.)	2002	5.5	0.18

Investment capacity in 2006 was 881.1 million USD

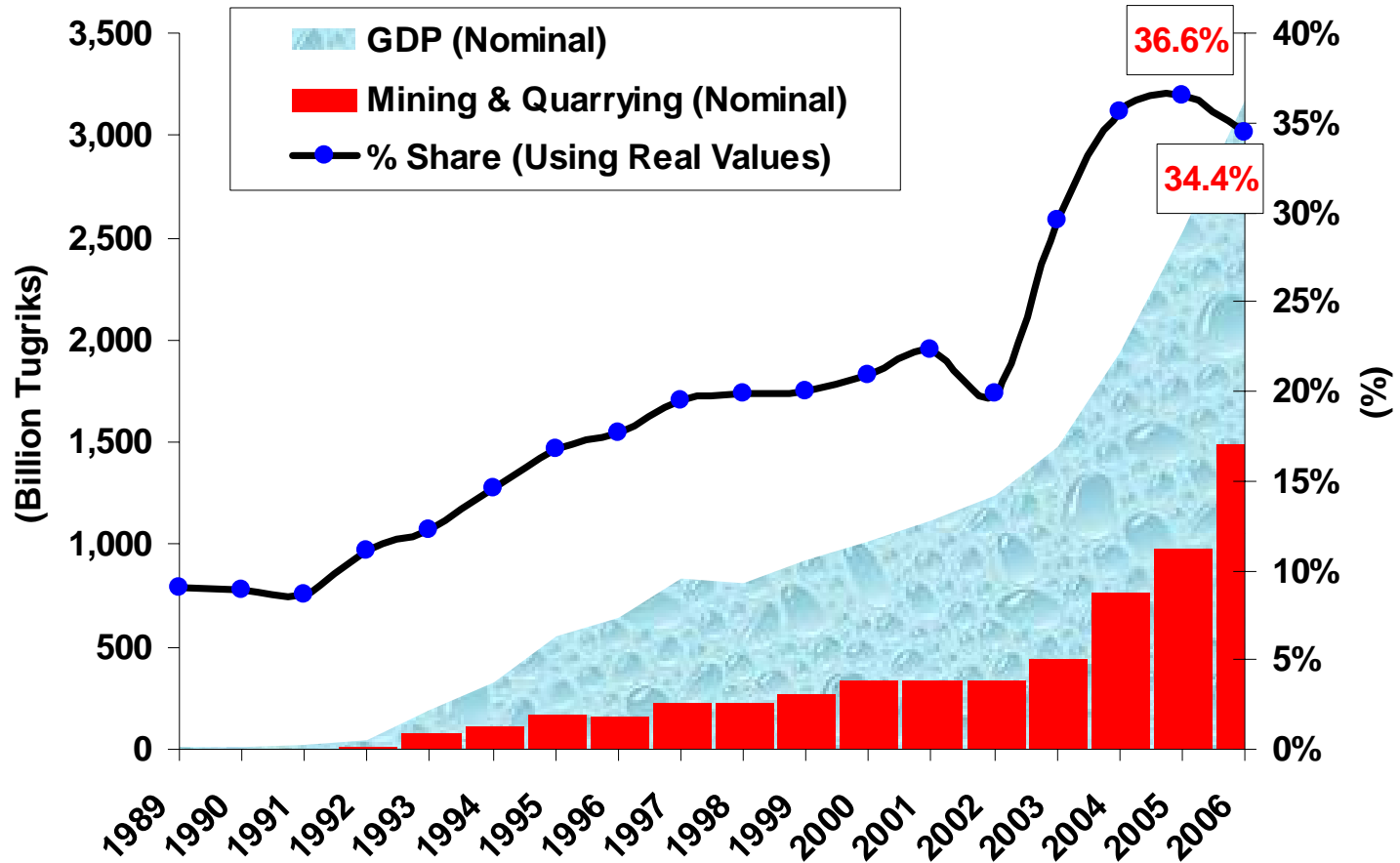
ICOR in the Mining Industry



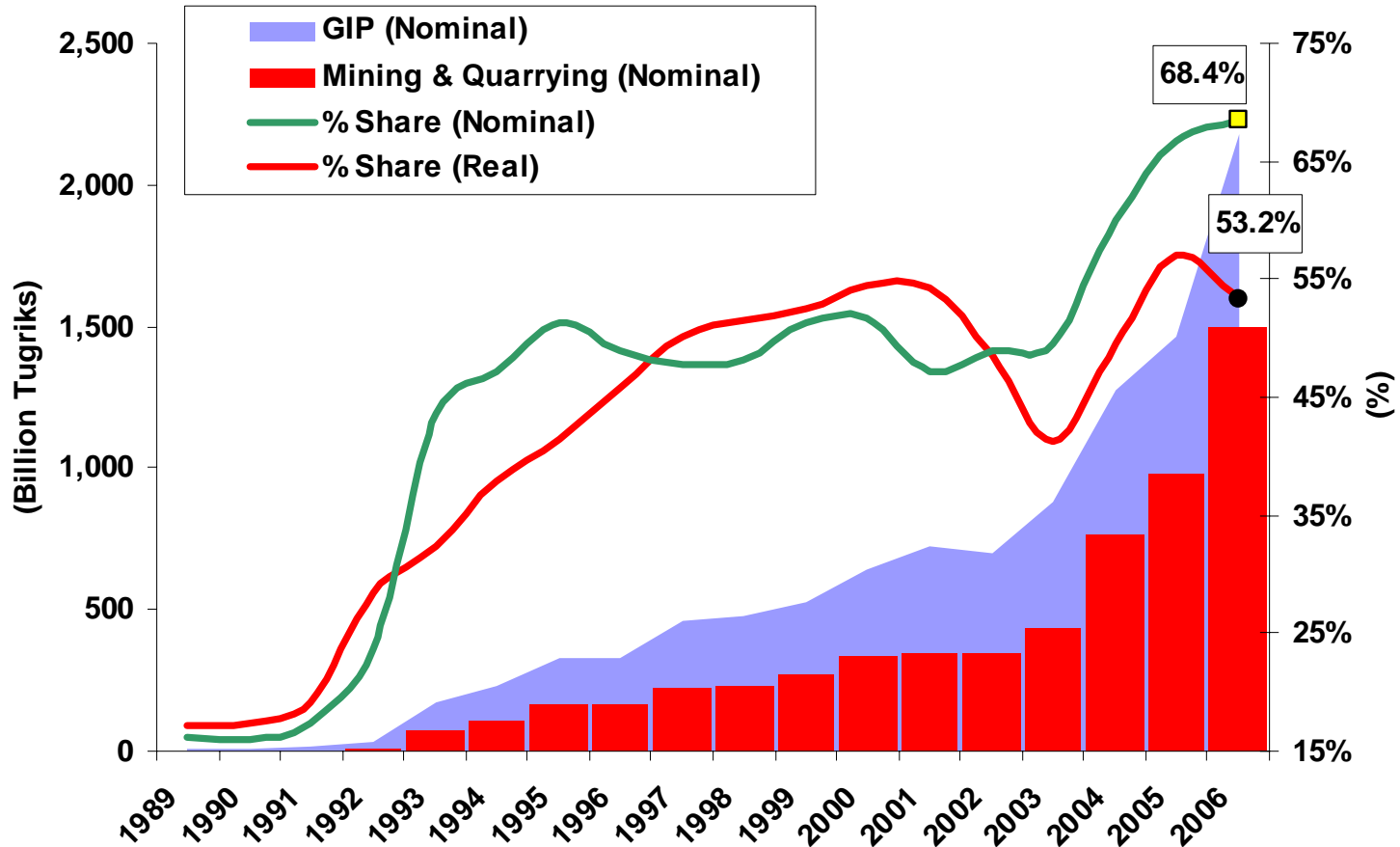
	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
Mining & Quarrying (Mln. USD), Nominal	380.39	645.80	811.66	1,265.48
Mining Quarrying (Mln. USD), Real 2000=100	292.37	377.18	408.55	425.40
Mining Investments (Mln. USD)	33.00	53.00	82.00	72.00
ICOR in Mining Industry		0.62	2.61	4.27

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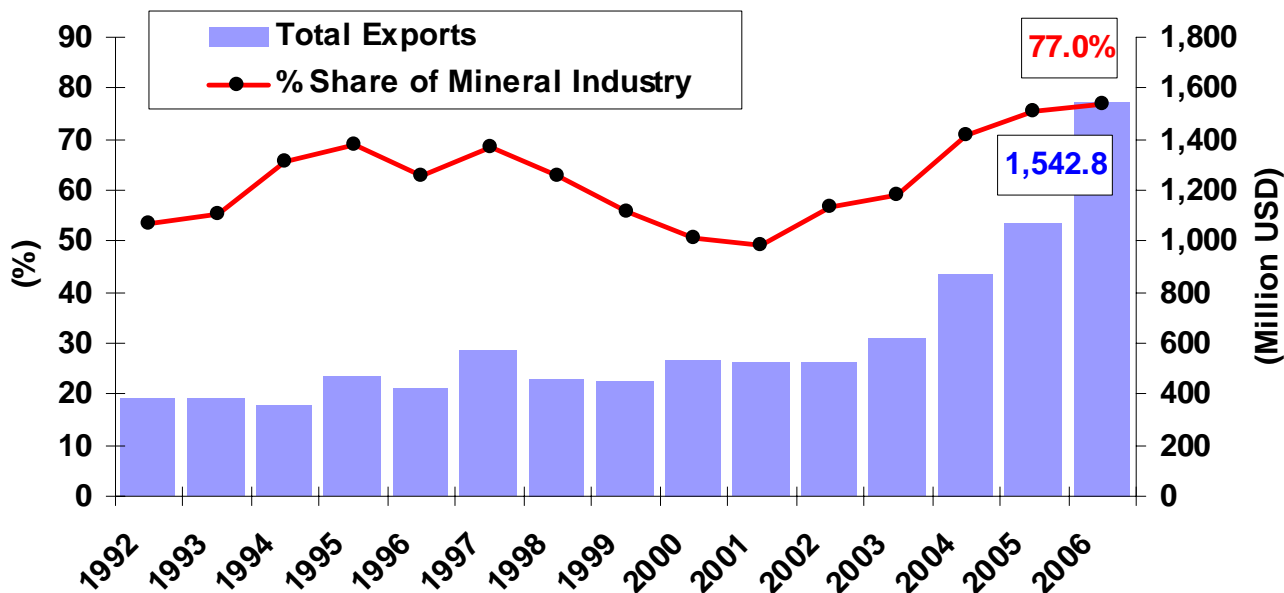
% Share of Mineral Industry in GDP (1989-06)



% Share of Mineral Industry in GIP (1989-06)

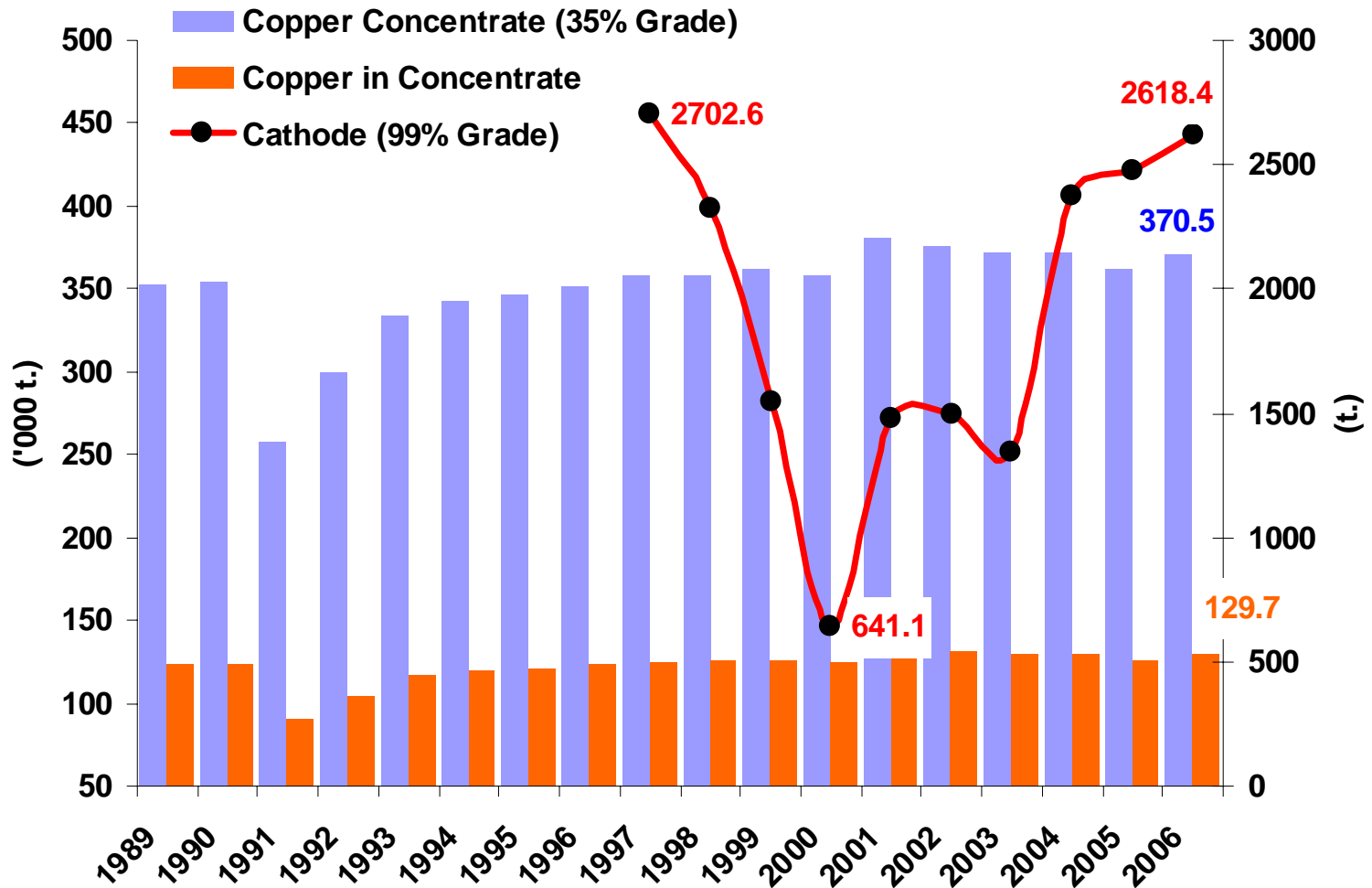


Mineral Industry & Exports (1992-06)



	Cu Conc. Exports (Mln. USD)	% in Total Exports (%)	Cu Conc. Exports Amount ('000 t.)	Cu Conc. Exports Growth (%)
2003	161.7	26.3%	568.9	3.7%
2004	284.3	32.7%	562.6	-1.1%
2005	326.2	30.6%	587.1	4.4%
2006	635.2	41.2%	599.5	2.1%

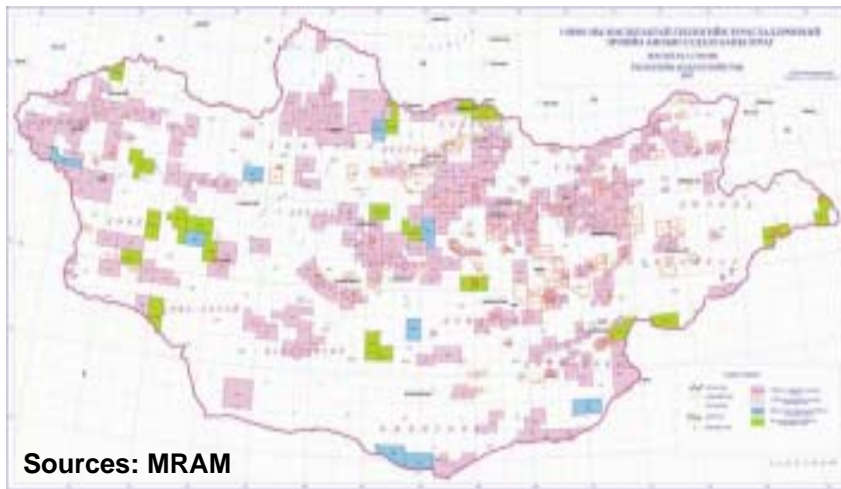
Copper Production (1989-2006)



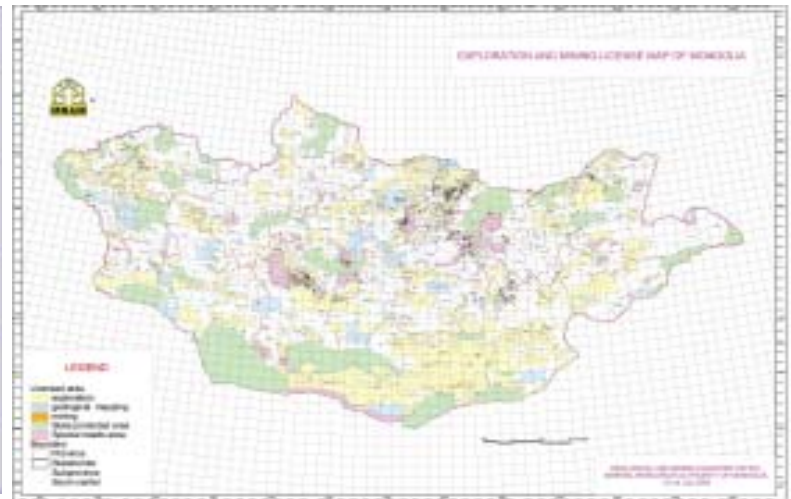
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24.8% of Mongolian territory is covered by general exploration & geological mapping on a scale of 1:50,000. This figure is expected to increase every year by 0.2 to 0.5 %.

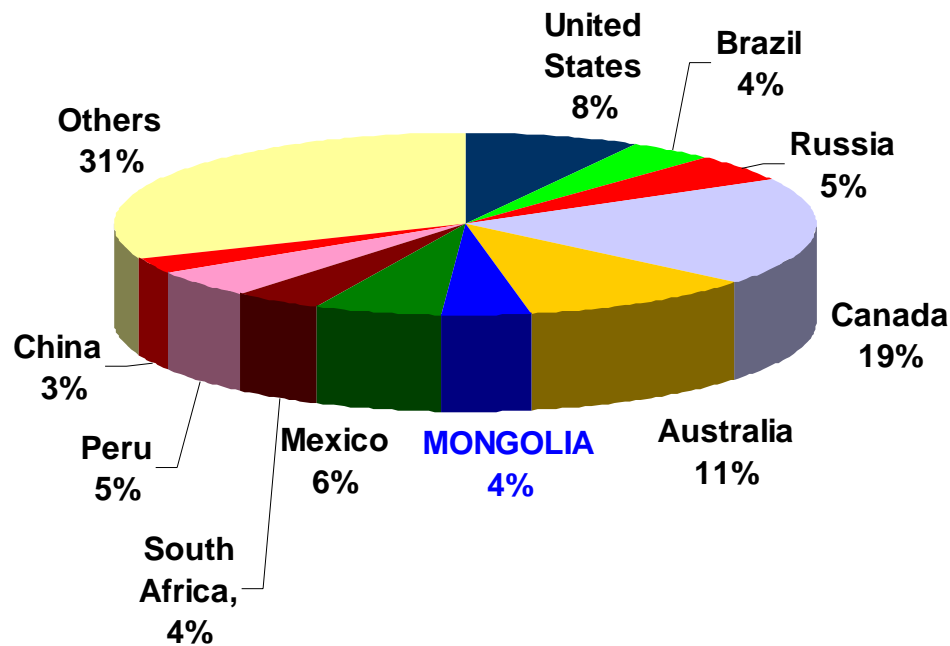
- 99.1% - geological mapping - 1:200,000 scale
- 84% - hydro-geological mapping - 1:500,000 scale
- 22.5% - gravimetric survey - 1:200,000 & 1:100,000 scales
- 60% - aerial magnetic survey - 1:200,000 scale
- 32% - aerial multi-spectral survey - 1:50,000 & 1:25,000 scales



Sources: MRAM



2006 Exploration Budgets



Source: Metals Economics Group, 2007

- Top 10 countries' budgets account for **69%** of 2006 total budgets of **7.13** billion USD.
- Continued growth in Mexico, China and Mongolia.
- 2006 exploration expenditure for Mongolia – **285.2** million USD.

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Strategically Significant 15 Deposits

STRATEGIC DEPOSITS



Strategically Significant Copper Deposits

Deposit	Company	Types of Minerals	Reserves (B+C1)	Annual Production/ Expected Capacity
Erdenet	EMC, JV Erdmin LLC	Cu / Mo	Cu: 3.2 mln. t. Mo: 90 thous. t.	599.5 thous. t. Conc.(2006). 70 thous t. Blister (exp.) 2,000 t. 8mm Cu wire
Oyu Tolgoi	Ivanhoe – Rio Tinto	Cu / Au	Cu: 24.0 mln. t. Au: 720 t.	See next slide
Tsagaan Suvarga	Mongol Alt LLC	Cu / Mo	Cu: 1.3 mln. t. Mo: 48.2 thous. t.	

Non-ferrous metallurgical complex:

- ❖ Meet domestic demand
- ❖ Export value added products

Expected Capacity of Oyu Tolgoi Project

Principal version, as of Aug 05

Description	1	2	3	4	5	Years			Project Total
	2009	2010	2011	2012	2013	6 to 10	11 – 20	21 – 40	
Total ore milled (M dmt)	25	26	26	28	29	31	308	603	1,085
Cu Concentrate Prod. ('000 dmt)	510	576	701	971	1,162	1,279	10,797	19,895	36,039
Copper (Cu) in Concentrate (M lb)	296	337	454	725	968	1,083	7,823	12,671	24,441
Gold (Au) in Concentrate ('000 oz)	441	653	508	440	223	1,653	2,047	4,295	10,338

Extended version, as of Aug 05

Description	1	2	3	4	5	Years			Project Total
	2009	2010	2011	2012	2013	6 to 10	11 – 20	21 – 36	
Total ore milled (M dmt)	25	26	27	28	30	51	522	651	1,368
Cu Concentrate Prod. ('000 dmt)	510	575	740	?	1,260	1,804	17,545	19,374	43,021
Copper (Cu) in Concentrate (M lb)	296	336	487	779	1,006	1,434	12,479	12,248	29,150
Gold (Au) in Concentrate ('000 oz)	441	655	464	444	249	2,919	2,479	3,926	11,653

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	2002	2003	2004	2005	2006
CIT	15% / 40%		15% / 30%		15% / 25%
Threshold:	100 million ₺		100 million ₺		3 billion ₺
VAT on Imported Equipments	15%	0%	0%	0%	0%
Royalty	2.5%	2.5% / 7.5%			2.5% / 5%
Windfall Profits Tax (WPT)	-	-	-	-	68%

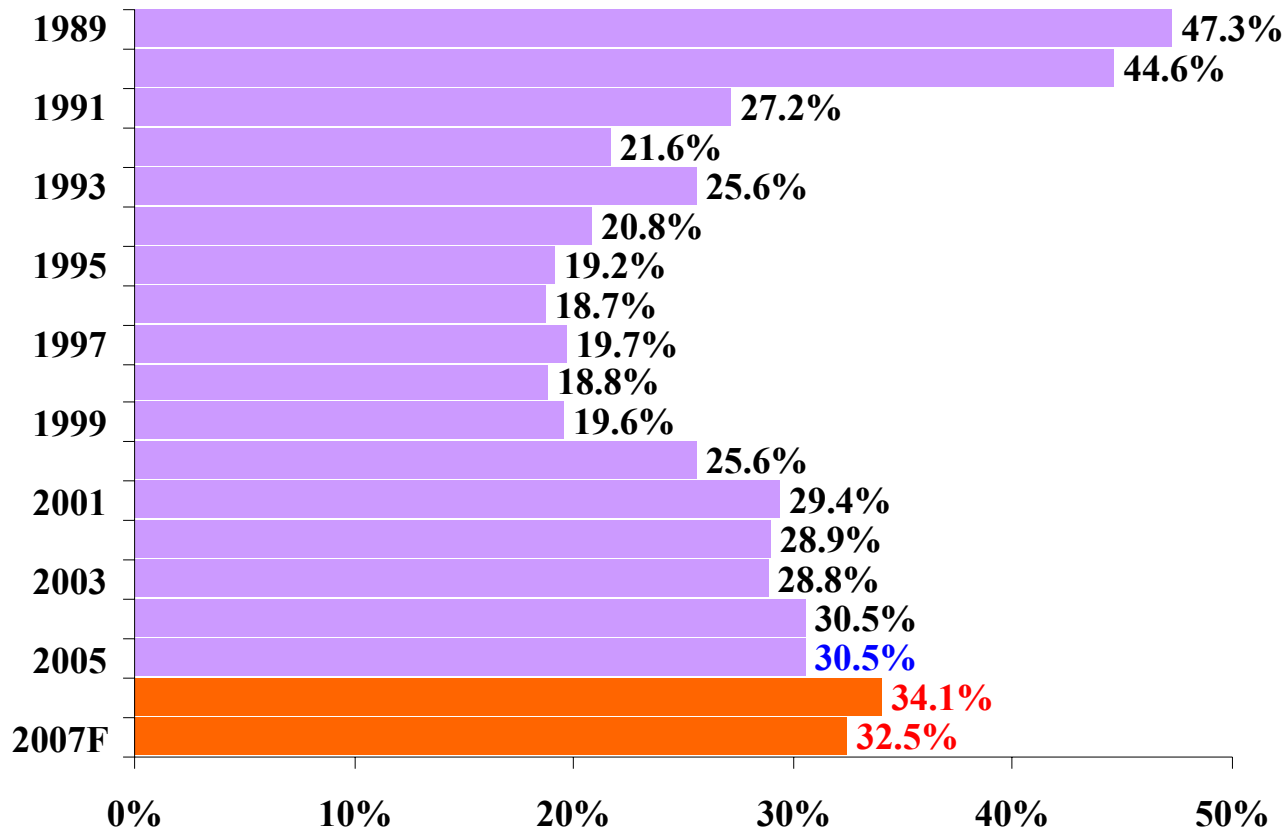
- Launched in May 2006
- Imposed to copper ore & concentrate as well as gold
- Predetermined base price (PBP) = **\$2,600/t** for copper
= **\$500/oz** for gold
- Revenues exceed PBP shall be taxed by **68%**

Amendments to the Minerals Law (Jul.06)

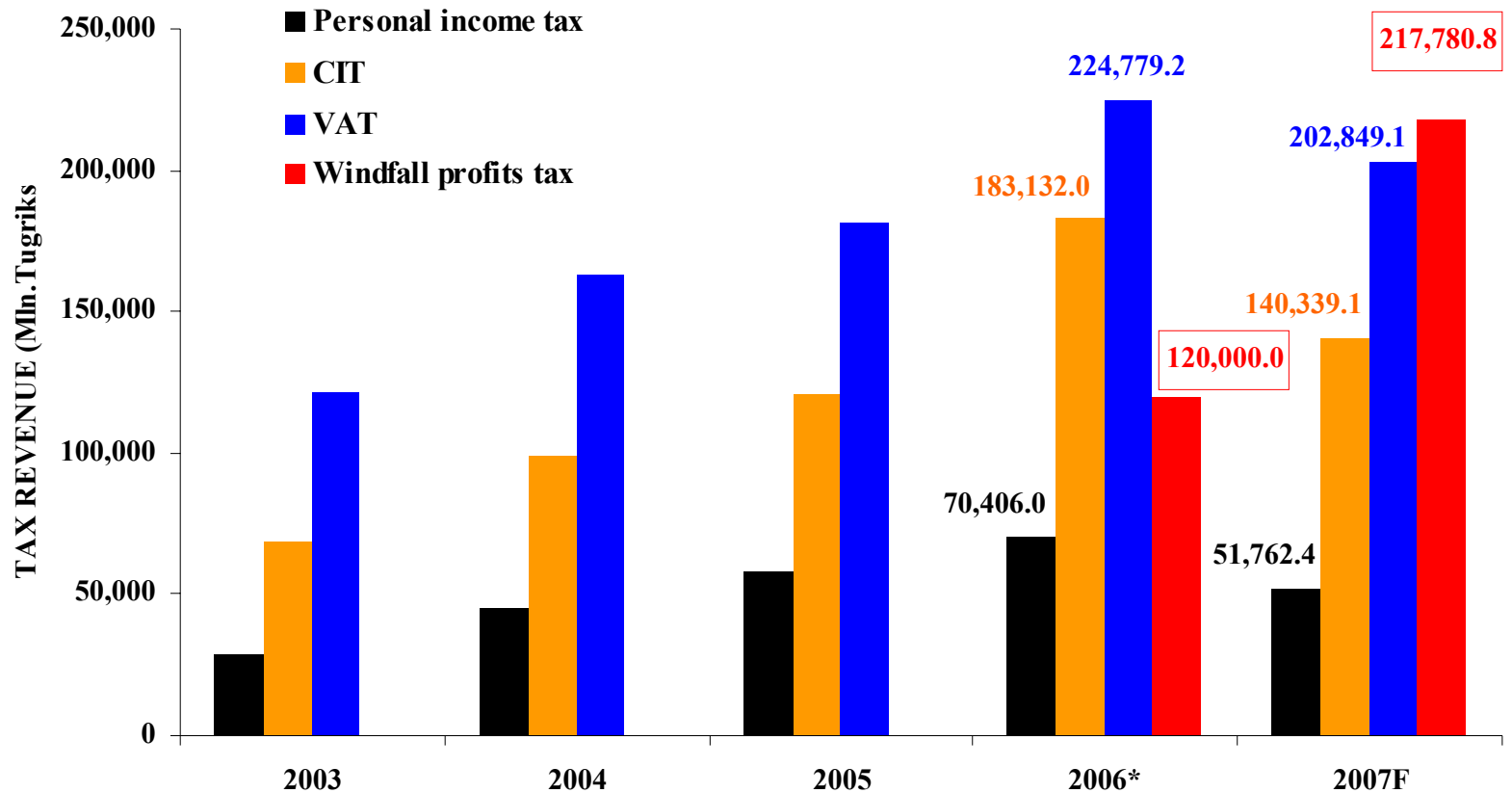
- **Strengthened environment protection & rehabilitation issues;**
- **More rights to local administrative bodies;**
- **Increased license holders' duties;**
- **Classification of mineral deposits:** a) Strategically important deposits; b) Common mineral deposits; c) Conventional mineral deposits
- **State Participation to Strategic deposits:**
 - Up to 50%: Exploration was financed & proven reserves were estimated by public investment;
 - Up to 34%: of investment shares of a license holder.
- **Exploration license validity:** 9 yrs (3+3+3), [used to 7 yrs].
- **Mining license validity:** 70 yrs (30+20+20), [used to 100 yrs].
- **Investment Agreement:** Investment exceeds **50** mln. \$US within the first 5 years (**≥50** mln. **10** yrs.); (**≥100** mln. **15** yrs.); (**≥300** mln. **30** yrs.)

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Tax Burden in Mongolian Economy



Tax Revenues by Selected Taxes



$$T = e^{(-2.5911)} \cdot GDP^{(1.0856)} \quad (1)$$

$$T = e^{(-4.0930)} \cdot GDP^{(1.2193)} \cdot D_{Ch(T)}^{(-0.3771)} \quad (2)$$

1992-2005

Tax Elasticity by Main Categories	Model 1	Model 2
VAT	Elastic $T_{VAT} = e^{(-15.12)} \cdot GDP^{(1.89)}$	Elastic $T_{VAT} = e^{(-15.41)} \cdot GDP^{(1.92)} \cdot D_{VAT}^{(-0.07)}$
Income Taxes	Inelastic $T_{IncT} = e^{(0.27)} \cdot GDP^{(0.79)}$	Inelastic $T_{IncT} = e^{(-1.38)} \cdot GDP^{(0.93)} \cdot D_{IncT}^{(-0.37)}$
Excise Taxes	Inelastic $T_{EXC} = e^{(-3.00)} \cdot GDP^{(0.97)}$	Inelastic $T_{EXC} = e^{(-2.97)} \cdot GDP^{(0.96)} \cdot D_{EXC}^{(0.01)}$
Customs/Exports Duties	Inelastic $T_{FT} = e^{(-2.05)} \cdot GDP^{(0.85)}$	Elastic $T_{FT} = e^{(-5.33)} \cdot GDP^{(1.13)} \cdot D_{FT}^{(-0.74)}$

1992-2005, 2006*+2007F

Total Tax Revenues	Elastic $T = e^{(-3.00)} \cdot GDP^{(1.12)}$	Elastic $T = e^{(-4.43)} \cdot GDP^{(1.25)} \cdot D^{(-0.42)}$
Income Taxes	Inelastic $T_{IncT} = e^{(-1.40)} \cdot GDP^{(0.92)}$	Elastic $T_{IncT} = e^{(-3.54)} \cdot GDP^{(1.10)} \cdot D_{IncT}^{(-0.53)}$

$$\left[\begin{aligned} \ln(T) &= \beta_0 + \beta_1 \cdot \ln(M / IP) + \beta_2 \cdot \ln(EX / GDP) + \beta_3 \cdot \ln(IMP) + \gamma \\ T &= e^{\beta_0} \cdot (M / IP)^{\beta_1} \cdot (EX / GDP)^{\beta_2} \cdot (IMP)^{\beta_3} \cdot e^{\gamma} \end{aligned} \right.$$

$$T = e^{(3.5248)} \cdot (M / IP)^{(0.6426)} \cdot (EX / GDP)^{(0.5270)} \cdot (IMP)^{(0.7437)}$$

T – Total tax revenues

IP – Gross industrial production

GDP – Gross domestic product

e – exponential constant

M – Mining & Quarrying

EX – Total expenditure and net lending

IMP – Total imports

Holding all else being constant:

If [M/IP] increases by 1%, total tax revenue will increase by 0.64%

Therefore, tax revenues and total budget revenues of Mongolia are highly dependent on its mineral industry.

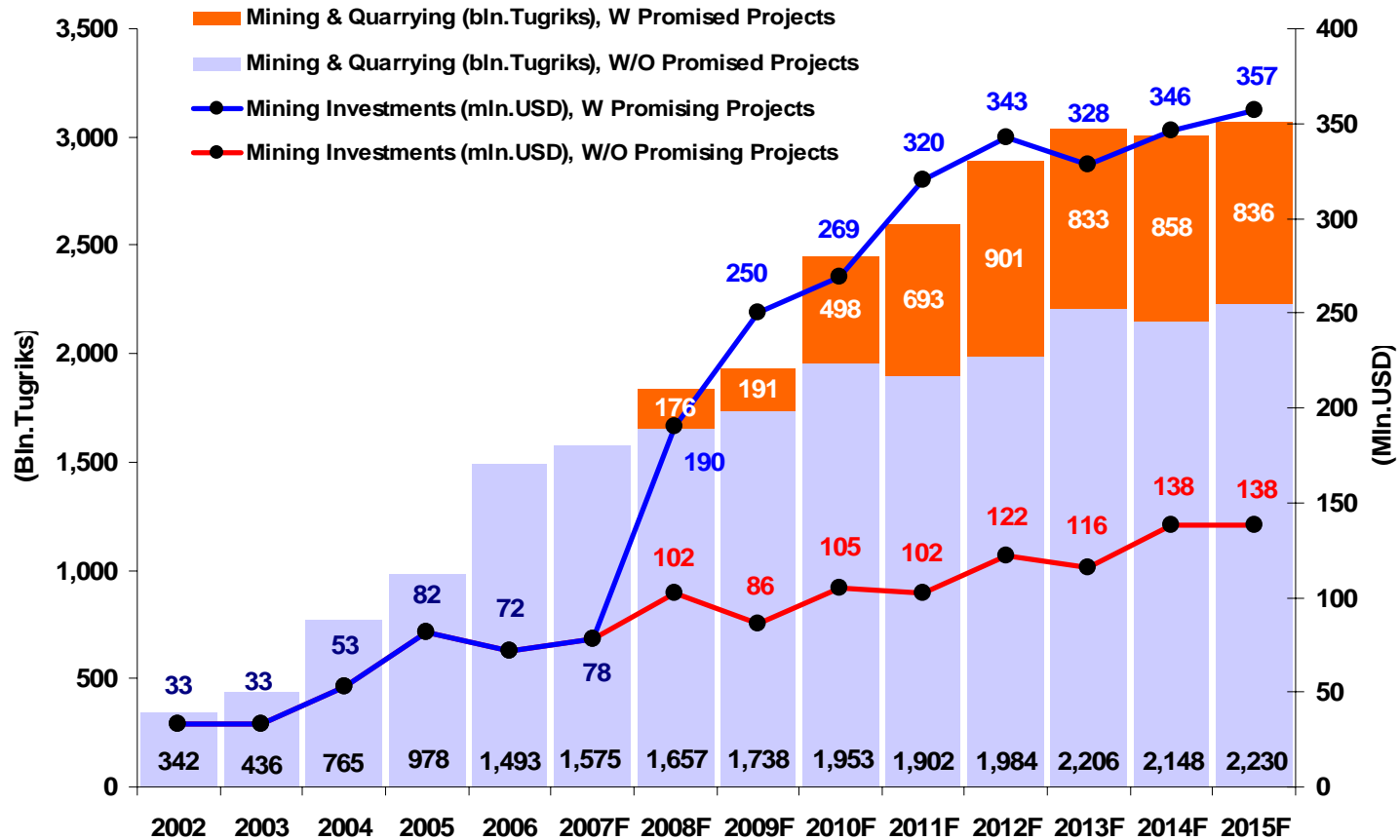
Policy Focus: Reduce this dependency and vulnerability.

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Promised Projects

	Deposit	Types of Mineral	Reserves
1	Khust Uul	Iron	4.4 mln. t.
2	Tsav	Lead, Zinc	Pb: 226.2 thous. t. Zn: 123.3 thous. t.
3	Bargilt	Iron	31 mln. t.
4	Tumurtei	Iron	229.3 mln. t.
5	Oyu Tolgoi	Copper, Gold	Cu: 24 mln. t. Au: 720 t.
6	Tsagaan Suvarga	Copper, Moly.	Cu: 1.3 mln. t. Mo: 48.2 thous. t.
7	Ulaan	Lead, Zinc	Pb: 186.4 thous. t. Zn: 245.8 thous. t.
8	Mardai	Uranium	1104 t.
9	Tavan Tolgoi	Cocking Coal	7 billion. t.

Contributions of Promised Projects to Mining & Quarrying and its Investments



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- Development Fund is financed by WPT revenues.
- Issues for discussion:
 - Commodity price risk ↔ Vulnerable budget.
 - Where to invest / spend WPT revenues?
- The Fund revenues are divided into 3 categories:
 - Savings (1/3)
 - Public investments (1/3)
 - Social welfare (1/3)
- DF revenues should be managed as a Stabilization Fund (Best practice – Chile).
- Development bank can be initiated and financed by the Fund in order for revenues to be expended as public investments.

- ❖ Mongolia's budget is highly dependent on metals price fluctuation in the global market. In order to reduce this dependency and fiscal planning to be more accurate, the effects of major exporting commodities' prices on the budget should be separated using Structural Budget Balance.
- ❖ **The Structural Budget Balance aims to eliminate the effects of cyclical fluctuations of economic activity on the general budget balance.** Total expenditures ceiling should be equal to the structural revenues (adjusted commodity price fluctuations and their effects) so that general government budget should be balanced over the long run.

- ***Integrated Policy for National Development*** (2007):
 - **2007-2015:** per capita GDP \$US 1500 → \$US 5000How to reach this target?
Implementation of promised projects on strategic deposits
- **2016-2021:** per capita GDP \$US 5000 → \$US 12,000
- **Requirements for FDI in the mineral industry:**
 - Environmental-friendly & Advanced Technology
 - Deep processing & Value-added production
 - Environment protection & rehabilitation
 - Mutual interests to both parties (Government & Investor)
- Needs to ameliorate accountability, transparency, credibility, certainty, predictability and stability of the Government services in order to attract reliable, prestigious investor with strong business ethic.

Thank you
for your
attention

