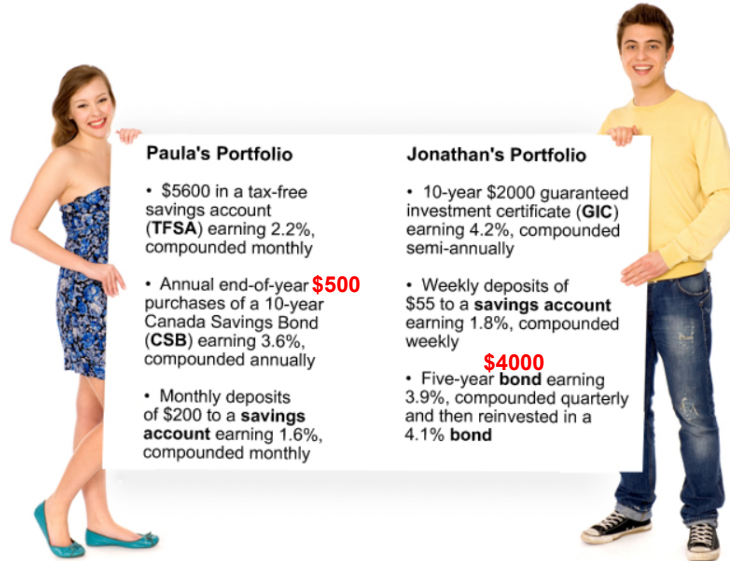


## Comparing Investment Portfolios

[Investment Portfolio Analysis Question.pdf](#)

Jonathan and Paula are each hoping to buy a house in ten years. They have each chosen an investment portfolio, hoping to save for a large down payment in ten years. Whose portfolio will show the better return?



Paula's Portfolio	Jonathan's Portfolio
<ul style="list-style-type: none"> <li>• \$5600 in a tax-free savings account (TFSA) earning 2.2%, compounded monthly</li> <li>• Annual end-of-year <b>\$500</b> purchases of a 10-year Canada Savings Bond (CSB) earning 3.6%, compounded annually</li> <li>• Monthly deposits of \$200 to a <b>savings account</b> earning 1.6%, compounded monthly</li> </ul>	<ul style="list-style-type: none"> <li>• 10-year \$2000 guaranteed investment certificate (GIC) earning 4.2%, compounded semi-annually</li> <li>• Weekly deposits of \$55 to a <b>savings account</b> earning 1.8%, compounded weekly</li> <li>• <b>\$4000</b></li> <li>• Five-year <b>bond</b> earning 3.9%, compounded quarterly and then reinvested in a 4.1% <b>bond</b></li> </ul>

Using the information provided, answer the following questions for each portfolio. *After making an honest effort, click each question to check your work.*

**1. How much principal do Paula and Jonathan each invest over the ten years? Include both single payment investments and the total of regular payments.**

**2. What is the future value of each person's portfolio, in ten years? Don't forget that Jonathan reinvests his bond after five years.**

**3. What rate of return does each person's portfolio have after ten years? Rate of return is the ratio of the amount an investment has increased in value at a given point to the amount invested.**

### Paula's Portfolio

- \$5600 in a tax-free savings account (TFSA) earning 2.2%, compounded monthly

```
5600(1+0.022/12)
^120
6976.624314
```

- Annual end-of-year **\$500** purchases of a 10-year Canada Savings Bond (CSB) earning 3.6%, compounded annually

```
N=10
I%=3.6
PV=0
PMT=-500
FV=5892.876993
P/Y=1
C/Y=1
PMT: [ ] BEGIN
```

TOTAL

```
6976.62+5892.88+
26007.87
A = 38877.37
      ↑ I
P = 34600
```

- Monthly deposits of \$200 to a savings account earning 1.6%, compounded monthly

```
N=120
I%=1.6
PV=0
PMT=-200
FV=26007.87215
P/Y=12
C/Y=12
PMT: [ ] BEGIN
```

ROI...

```
38877.37-34600
4277.37
Ans/34600*100
12.36234104
```

Interest  
ROI ⇒ 12.4%

### Jonathan's Portfolio

- 10-year \$2000 guaranteed investment certificate (GIC) earning 4.2%, compounded semi-annually
- Weekly deposits of \$55 to a **savings account** earning 1.8%, compounded weekly
- Five-year **\$4000** bond earning 3.9%, compounded quarterly and then reinvested in a 4.1% bond

$$2000(1+0.042/2)^{20}$$

3030.713178

N=520	
I%=1.8	
PV=0	
PMT=-55	
FV=31329.72293	3030.71+31329.72
P/Y=52	+5955.44
C/Y=52	40315.87
PMT: <input type="checkbox"/> END <input checked="" type="checkbox"/> BEGIN	

*total*

*Reinvest*

$$4000(1+0.039/4)^{20}$$

4856.654713

$$4856.65(1+0.041/4)^{20}$$

5955.441857

$$I = 40315.87 - 34600$$

$$I = 5715.87$$

$$ROI = \frac{\$earn}{\$invest}$$

$$= \frac{5715.87}{34600} \times 100\%$$

= 16.5%

# SOLUTIONS...

1)

**Paula's Investment:**

$$5600 + 10(500) + (200)(12)(10)$$

$$= 34600$$

Paula invested \$34600

**Jonathan's Investment:**

$$2000 + (55)(52)(10) + 4000$$

$$= 34600$$

Jonathan invested \$34600

Paula and Jonathan will invest the same amount over the ten years.

2)

Use the financial application on your graphing calculator:

For single-payment investments, enter: Term in years, Present value, Annual interest rate, Compounding frequency

For regular-payment investments, enter: Number of payments, Regular payment amount, Payment frequency, Payments at Beginning or End of compounding period, Annual interest rate, Compounding frequency

**Future Value (Paula)**

TFSA = \$6976.62

CSBs = \$5892.88

Savings Account = \$26 007.87

---

**Portfolio total** = \$38 877.37

Total future value = \$38 877.37

**Future Value (Jonathan)**

GIC = \$3030.71

Savings Account = \$31 329.72

Bond (reinvested at 5 yrs\*) = \$5955.45

---

**Portfolio total** = \$40 315.88

Total future value = \$40 315.88

\* Jonathan's bond has a future value of \$4856.65 after five years, which he reinvests for another five years at 4.1%.

3)

Subtract the amount invested from the future value, then divide by the amount invested.

**Rate of Return (Paula)**

$$= \frac{38877.37 - 34600}{34600}$$

$$= 0.123$$

**Rate of Return (Jonathan)**

$$= \frac{40315.88 - 34600}{34600}$$

$$= 0.165$$

Jonathan's portfolio will have a rate of return of about 17%. This is about 5% higher than the rate of return from Paula's portfolio, which will be about 12%.

Managed Solutions

(Class A)

Select Income Advantage Managed Corporate Class (Class A)



Fund Facts

as at September 30, 2012

Fund Codes	Managed	Custom
ISC	CIG2290	CIG2265
DSC	CIG3290	CIG3265
LSC	CIG1420	CIG1465

Managed By: CI Investments Inc.

Advisors: CI Investment Consulting

Assets Under Management\*: \$727.1 million

Portfolio Manager: Multi-manager

Asset Class: Diversified Income

Inception Date: July 2010

NAV: \$10.80

Min. Initial Investment: \$25,000

Subsequent Purchase(s): \$25,000

Min. PAC Investment: \$250

Management Expense Ratio: 2.02%

Top Holdings as at August 31, 2012

Gov't of Canada, 2.00%, March 1, 2014	2.03%
Gov't of Canada, 2.75%, June 1, 2022	1.91%
Gov't of Canada, Treasury, 2.00%, November 15, 2011	1.88%
Gov't of Canada, 4.00%, June 1, 2041	1.55%
Eli Lilly & Co.	1.46%
Gov't of Canada, 2.25%, August 1, 2014	1.24%
Gov't of Canada, 3.00%, December 1, 2015	1.18%
Province of British Columbia, 3.70%, December 18, 2020	1.15%
iShares DEX Universe Bond	1.14%
Province of Quebec, 4.50%, December 1, 2020	1.10%
<b>Total</b>	<b>14.64%</b>

Volatility Meter



Equity Style and Capitalization Overview

	Blend	Growth	Value
Large			
Mid			
Small			

Source: CI Investments and The Globe and Mail Inc.

OBJECTIVE

The investment objective of this fund is to provide exposure to a diversified portfolio of income-generating securities in a manner that is similar to holding multiple income-generating funds. The fund invests primarily in investment grade fixed income securities issued by governments and corporations in Canada and globally. The fund may also invest up to 50% in other income generating securities such as preferred shares, common shares and real estate investment trusts. The fund's investment will be made primarily through investments in other mutual funds, either directly or by entering into derivatives, and the fund may directly hold securities from time to time. Any change to the investment objective must be approved by a majority of the votes cast by shareholders at a meeting called to consider the change.

Compound Returns and Quartile Rankings (as at September 30, 2012)

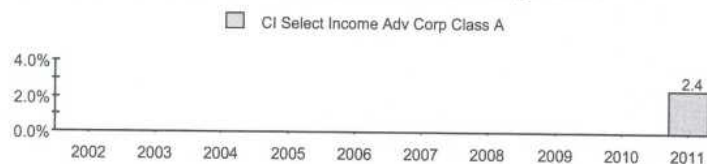
This table shows the historical annual compound total return of the fund compared with the Globefund Group Average and the fund's quartile ranking within the Globefund Peer Group. The returns listed below are percentages. Performance of the fund versus its official benchmark can be found in the Management Report of Fund Performance (MRFP). See the related document section on this web page.

	YTD	1Mo	3Mo	1Yr	3Yr	5Yr	10Yr	Since Inception*
Qrtl	2	4	4	3	(N/A)	(N/A)	(N/A)	(N/A)
Return	5.37	0.84	0.93	7.14	(N/A)	(N/A)	(N/A)	3.54
Grp Avg	5.08	1.2	2.31	8.05	5.42	3.17	4.2	(N/A)

\*July 13, 2010

Performance Data

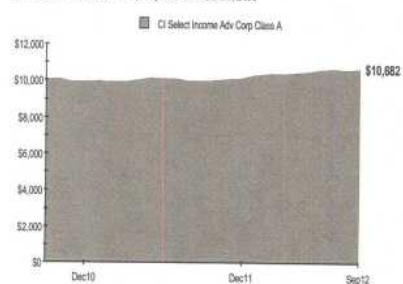
This chart shows you the fund's annual performance and how an investment would have changed over time.



Asset Class



Current Value of a \$10,000 Investment



**Fund Facts**

as at September 30, 2012

Fund Codes	Class A	Corporate Class
ISC	CIG9010	CIG2308
DSC	CIG9060	CIG3308
LSC	CIG1150	CIG1308

**Managed By:** CI Investments Inc.

**Advisors:** Signature Global Advisors  
Chief Investment Officer Eric Bushell

**Assets Under Management\*:** \$346.8 million

**Portfolio Manager:** John Shaw and Geof Marshall

**Asset Class:** Global Fixed Income

**Inception Date:** December 2001

**NAV:** \$9.97

**Min. Initial Investment:** \$500

**Subsequent Purchase(s):** \$500

**Min. PAC Investment:** \$50

**Management Expense Ratio:** 2.10%

**Top Holdings** as at August 31, 2012

Gov't of Canada, 2.75%, June 1, 2022	0.93%
Harvest Operations Corp., 6.88%, October 1, 2017	0.82%
International Lease Finance, 8.75%, March 15, 2017	0.82%
Lincoln National Corp., 7.00%, May 17, 2066	0.74%
Calpine Corp., 7.50%, February 15, 2021	0.72%
Chiron Merger Sub, 10.50%, November 1, 2018	0.70%
National Money Mart Company, 10.38%, December 15, 2016	0.66%
SunGard Data Systems, 10.25%, August 15, 2015	0.60%
Multiplan Inc, 9.88%, September 1, 2018	0.58%
Pacific Rubiales Energy, 7.25%, December 12, 2021	0.57%
<b>Total</b>	<b>7.14%</b>

**Volatility Meter**



**Fixed Income and Capitalization Overview**



Source: CI Investments and The Globe and Mail Inc.

**Signature Corporate Bond Fund (Class A)**

Also available: Class F & I



**OBJECTIVE**

The fund's investment objective is to achieve a yield advantage by using fundamental value analysis to evaluate investments. The fund will invest mainly in fixed-income securities that are investment grade and below investment grade. The fundamental investment objective of the fund can only be changed with the approval of a majority of the votes cast by unitholders at a meeting called specifically to vote on the change to the investment objectives.

**Compound Returns and Quartile Rankings** (as at September 30, 2012)

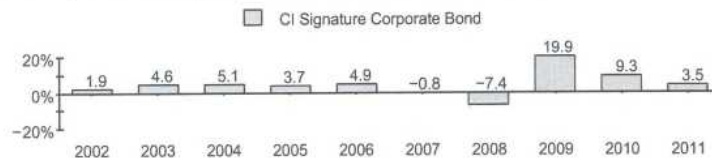
This table shows the historical annual compound total return of the fund compared with the Globefund Group Average and the fund's quartile ranking within the Globefund Peer Group. The returns listed below are percentages. Performance of the fund versus its official benchmark can be found in the Management Report of Fund Performance (MRFP). See the related document section on this web page.

	YTD	1Mo	3Mo	1Yr	3Yr	5Yr	10Yr	Since Inception*
Qrtl	3	4	4	3	3	3	3	(N/A)
Return	6.84	0.61	1.82	10.73	7.56	6.13	4.89	4.6
Grp Avg	8.45	1.13	3.29	11.99	8.31	6.2	6.16	(N/A)

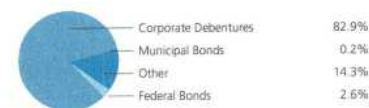
\*December 17, 2001

**Performance Data**

This chart shows you the fund's annual performance and how an investment would have changed over time.



**Bond Type**



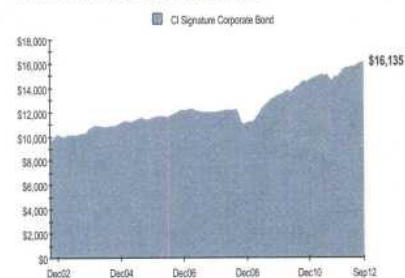
**Bond Term**



**Geographic Composition**



**Current Value of a \$10,000 Investment**



**Fund Facts**

as at September 30, 2012

Fund Codes	Class A	Corporate Class
ISC	CIG686	CIG2304
DSC	CIG786	CIG3304
LSC	CIG1786	CIG1304

**Managed By:** CI Investments Inc.

**Advisors:** Signature Global Advisors  
Chief Investment Officer Eric Bushell

**Assets Under Management\*:** \$4,168.7 million

**Portfolio Manager:** Geoff Marshall, Joe D'Angelo and Ryan Fitzgerald

**Asset Class:** Canadian Balanced Income

**Inception Date:** December 1996

**NAV:** \$14.02

**Min. Initial Investment:** \$500

**Subsequent Purchase(s):** \$500

**Min. PAC Investment:** \$50

**Management Expense Ratio:** 1.60%

**Top Holdings** as at August 31, 2012

Inter Pipeline Fund	2.16%
Suncor Energy	2.01%
Royal Dutch Shell PLC	1.99%
Cominar REIT	1.91%
Cdn. Real Estate Investment	1.73%
Allied Properties REIT	1.67%
Brookfield Asset Management	1.62%
Brookfield Renewable Energy	1.32%
Transurban Group	1.30%
H&R Real Estate Invest. Trust	1.24%
<b>Total</b>	<b>16.95%</b>

**Volatility Meter**



**Equity Style and Capitalization Overview**



Source: CI Investments and The Globe and Mail Inc.

**Signature High Income Fund (Class A)**

Also available: Class F & I



**OBJECTIVE**

This fund's objective is to generate a high level of income and long-term capital growth. It invests primarily in high-yielding equity securities and Canadian corporate bonds. Any change to the investment objective must be approved by a majority of votes cast at a meeting of unitholders held for that reason.

**Compound Returns and Quartile Rankings** (as at September 30, 2012)

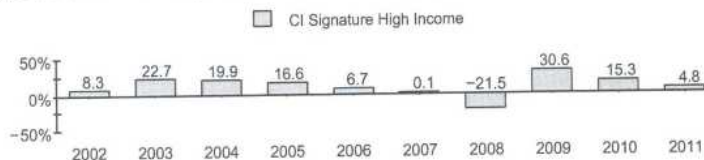
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	YTD	1Mo	3Mo	1Yr	3Yr	5Yr	10Yr	Since Inception*
Qrtl	1	4	1	1	1	1	1	(N/A)
Return	8.61	1.22	3.43	13.87	11.54	5.75	9.44	9.74
Grp Avg	5.8	1.75	2.95	9.28	5.07	1.37	4.85	(N/A)

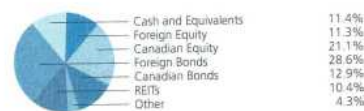
\*December 18, 1996

**Performance Data**

This chart shows you the fund's annual performance and how an investment would have changed over time.



**Asset Class**



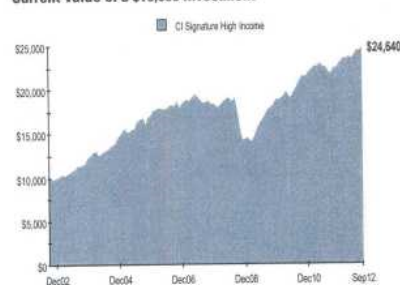
**Equity Sectors**



**Geographic Composition**



**Current Value of a \$10,000 Investment**



HOMWORK...

Quiz on \*Tuesday...

**PRACTICE QUESTIONS...**  
 p. 509:  
 Formulas...#1, 2a, 3, 4, 6, 7a  
 TVM-Solver...#8, 9, 10  
 p. 506: Self Test  
 Portfolio p. 503 #3

- Simple Interest



$$I = Prt \quad A = P + Prt$$

$$A = P + I \quad A = P(1 + rt)$$

- Compound Interest

$$A = P \left( 1 + \frac{r}{n} \right)^{nt} \quad I = A - P$$

- Rate of Return

$$ROR = \frac{\text{earn}}{\text{invested}} \times 100\%$$

- Rule of 72

$$\text{doubling time} = \frac{72}{\text{rate}}$$

- Present Value

$$P = \frac{A}{\left( 1 + \frac{r}{n} \right)^{nt}}$$

- Regular Payments (TVM-Solver)

```
N=
I% =
PV =
PMT =
FV =
P/Y =
C/Y =
PMT:  END  BEGIN
```



## Attachments

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Investment Portfolio Analysis Question.pdf