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C n sto s pro n ro nt r st n n t on s A s tor E n t on o t spons to n nt p t o n nt r st n n t on t s

r l Gon r
[illegible]

Fr nc sco J r no
[illegible]

Fr n s nm r Corr spon n Aut r
[illegible]

A str t

T s p p r m s t e r l t on b t n stoc r turns n un p ct c n s n no n l n r l nt rr st r t s n n l t on or t e S stoc r t t e c pt on o S n m n r 198 . r t e rst to m t s r l t on n t l b br n t e r sults o n ro t e S stoc r t l v l to s ctor. sub s ctor n to

ntro t on n t r t r r

T s p p r s on o t to st t t sto c r turn r spons to un p ct s c n s n t no n l nt rest r t n ts co pon nts. un p ct c n s n t n l t on r t n t r s u l t t nt rpr t s un p ct c n s n t r l nt rest r t To cco pl s t s . us n t ns on o t Ston 19 4 t o r ctor o l propos n J r no 2 6 n . p rtl . n J r no 2 8 n J r no n N v rro 2 6 s n t s ppro c h t o contr but ons F rst. n l s t s r l t ons t t s ctor. sub s ctor n n ustr l v l T s. st t not onl t r l t on b t n sto c r turns n un p ct no n l nt rest r t c n s but lso t r l t ons b t n sto c r turns n un p ct c n s n t r l nt rest n n l t on r t s b s ctor. sub s ctor n n v u l n ustr s S con . n m lon t p r o . ro S pt b r 1989 to F bru r 2 14 T s p r o n co p ss s v r t o. cono c con t ons. nclu n on o. t lon st p ns on p r o s or t S cono . on o. t ost s v r cr t contr ct ons n l v n or n s v r l r cess ons T s s pl v r t on n cono c con t ons llo s us to plor t st b l t o. t s r l t ons ov r ll. n b s ctor. sub s ctor n n ustr T s t l nv st t on nto t st b l t o. t s r l t ons llo s us to s rc por sp c l n ustr s s r spons to un p ct c n s n no n l n r l nt rest r t s. n un nt c p t n l t on. s cons st nt. t t r pos t v or n t v . t r b prov n v lu bl n or t on or nv stors n pol c ers h p v to cons r t s port nt sour c s o. s st t c r s

As nt on pr v ousl . cc or n to ost o. l t r tur . t r spons o. sto c r turns to c n s n no n l n r l nt rest r t s s usu ll n t v ur r sults n r ll r t t s pr v ous n n s Also. l Boot n r c r 1985 n B 199 . n t t so n nc l s ll s non n nc l s ctors p v ns n c nt r l t ons Ho v r. n lso n so contr r r sults n n n t

t hou ghout our s ple per o so t ere s l s rcentl ssur 0 e r not t pt t e F c n us to ccur tel est t 0 e r tr sur el s T ere or . e us c pn es n t e 0 e r J S T r sur bon el s . s rport b t e F er l esserv B n o . N . Yor n T ble H15 . s our ppro t on or um pct c pn es n t e no n l nterest r t 2

2 2 E pect n l t on r t s

Alt ough prev ous stu es ve ppl v r et o et o olo s to est t e pect n l t on r t s . lot o rel t n cruc l p pers ce n ol . 1988 . Sc pert . 1981 . Fr ser *et al.* . 2002 . estel n Gur ul . 2003 . n J rmo . 2008 . use s ple t es ser es A I A o els to est t e t e pect n l t on co ponent T ese stu es ssu e t t e curr nt tot l n l t on r t π_t c n be bro en o n nto t e su o ts e pect π_t^e n um pect π_t^u co ponents T us . t e pect co ponent s est t use n A I A o els t ere b ssu n t t s co ponent epen s upon ts o n p st ser es T en t e or c st errors ro t e A I A o el or our est t o un nt c p t c pn es n n l t on e lso use A I

$$E_t(\pi_{t,t+1}) = \rho\pi_{t-1,t}$$

In ot r or s, p ct t ons r r or n p rt ρ cc or n to t A A 1 proc ss , s q t t or t p ct r t q nnu l s n l t on π ov r t n t ont p t l b s on t ost r c nt ont p nnu l s n l t on r t t pt volv ro t l to t

2 3 n p ct c p n s n t r l r t q nt r st

As nt on bov , us c p n s n t 1 r S T r sur bon l s our ppro t on or un p ct c p n s n t no n l nt r st r t T o obt n un p ct c p n s n t r l r t q nt r st ss u t F s r ppro t on n subtr ct t p ct r t q n l t on $E_t\ \pi_{t,t\ 1}$ s st t bov ro t no n l r t q nt r st t

$$r_t \approx i_t - E_t(\pi_{t,t+1})$$

T n, c p n s n t bov r l t on or our ppro t on or un p ct c p n s n t r l r t q nt r st

2 4 T St on 19 4 t o ctor o l

T l t r tur o cus s nl on t St on 19 4 t o ctor o l to sur t nt r st r t s ns t v t q sto c r turns n n Zu lt 198 S n r 198 N l 1998 Fr s r *et al.* 200 2 B rtr 200 2 Soto *et al.* 200 5 St our s 200 5 J r no 200 n 200 8 n Fr rr r *et al.* 20 1 us n t ns on q t St on 19 4 o l t pt co pos s un p ct c p n s n t no n l nt r st r t nto un p ct c p n s n r l nt r st n q l t on co pon nts n t n tur q T ss ro t s 200 3 Corn ll 2000 J r no 200 n 200 8 Ho v r ll q t s

stu s o not n s ctor ot r t pn t h n nc l or t ut l t s ctor T ps. p propos n n l s s t t s ctor. sub s ctor n n ustr l v l us n n t ns on o. t 7ston 19 4 o l

T p c ll . stu s o. nt rnst r t s ns t v t o. stoc r turns st rt ro t C p t l Ass t r c n o l CA j u nt b um p ctr c pn s n no n l nt rnst r t s 7ston. 19 4 to b ttr n pl n t h stoc pst c proc ss t pt nm r t s s cur t r turns T hr or. ust n Ar n o t l s 2006 2 o l o. stoc r turns b s ctor. sub s ctor n n ustr v

$$r_{jt} = \alpha_j + \beta_j r_{mt} + \gamma_j \Delta i_t^u + \varepsilon_{jt} \qquad 1$$

hr r_{jt} s t h stoc s ctor. sub s ctor or n ustr j r turn n ont pt. β_j s h s t h stoc s ns t v t to r t ov nts. r_{mt} s t h r turn on t h r t port. ol o. Δi_t^u r pr s nts um p ctr c pn s n no n l nt rnst r t s n . n ll .

T tps. our r sults s to b ro ust. s nc t ps ort φ on l t on pro c ss v ntl onl

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T r n l corr l t ons b t n pl n tor v r bl s nclu n our o l r

r port nT bl l j m l b ot c t pt t e corr l t on b t n un p ct c pn s n

t r l nt rr st r t n un p ct c pn s n t n l t on r t s ro

N SE T T AB E l AB J T HE E

2 5 St t q. t E cono

V ron s 1999 . n et al 2008 n D n J r no 2009 n 2013 .

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NOTES TO THE ABRIDGED FINANCIAL STATEMENTS

NOTES TO THE FINANCIAL STATEMENTS

Data

Our analysis includes companies from the S&P 500 Index, S&P MidCap 400 Index and S&P SmallCap 600 Index in November 1989 to February 2014, 292 companies in total. The GICS sector classification, developed by and a standard product of Capital IQ and MSCI[5], classifies companies into 10 sectors, 24 industry groups, 68 industries and 154 sub-industries. We use the Bloomberg API to download the S&P 500 constituents from Bloomberg and then use the Compustat Point-in-Time database to avoid survivorship bias. We exclude companies in the Real Estate sector, which has a unique financial statement structure.

Table A reports the sectors, subsectors and industry classifications according to the GICS codes and counts the Bloomberg segments. In this paper, we analyze 10 sectors, 24 subsectors, 68 industries and 154 sub-industries. The latest GICS structure effective on April 29, 2016, is described in Table 1. There are 1,258 companies in the sample. Consumer Discretionary, Consumer Staples, Energy, Health Care, Industrials,

Table 3 reports the counts of returns for the S&P 500 Index constituents. The number of companies with returns for all sectors in the first row is 58 basis points or 7.2% annual basis. Comparing the number in the return 58 basis points or 7.2% annual basis. Comparing the number of

[5] The classification system is to aid the investment research process, not for financial reporting. Also, GICS is the result of numerous discussions to address portfolio

To vo nco s oot p . us n v lur s m t o v n s us t
S&P500 n s su t bl r pr s nt t v o t JS stoc r t n co put t lo
r l t v r turn n n n lo ous s n 3 to obt n r t lo returns

E p r r s ts

st t o o ls. l m s t r l t on b t n stoc returns n
un nt c p t c p n s n no n l nt r st r t s n 2 st t s t r l t on b t n
stoc returns n un nt c p t c p n s n r l nt r st n n l t on r t s Bot p o ls
r ppl s p r t l b s ctor. sub s ctor n n ustr n r st t t ou ut
t s pl p r o n ur n p ns on n contr ct on cono c sub p r o s ro
S pt b r 1989 to F bru r 2014 st t o ls l n 2 s p r t l us n t
s n l unr l t r r ss on" S t c qu Z ll n r. 1962 or c o t s ctor.
sub s ctor n n ustr s pl s. s S r r ss ons n ll. t r b t n nto ccount
poss bl cont por n ous corr l t on n t rror t r s cross s ctors. sub s ctors n
n ustr s s ll s r os st c t

4 l sults t t s ctor l v l

r r ss o ls l n 2 t t s ctor l v l n r port t r sults n
t bl 4 n l A r ports t r sults or t nt r s pl p r o n n ls B n C
r port t r sults or t contr ct on n p ns on p r o s r sp ct v l T us
squ r s o bot p o ls r v r s l r r or o l l. t us squ r n s
b t n bout 65 or In or t on T c p olo n bout 24 or J t l t s All s ctors
p b t pos t v n s n c nt r t b t or bot p o ls ov r ll n n t
contr ct on n p ns on sub p r o s t b

b t co c nts v r b t in n t h l s J t l t s 4 7 to t h ost r s

In or t on T c nolo s ctor l 38

N SE T T AB E 4 AB J T HE E

oo n t o l l or t h ov r ll s pl p r o t h r sults con r s

not ort h r l t ons hp b t in s ctor stoc r turns n un p ct c hn s n

no n l nt r st r t s s s o t h t n s ctors hv st t st c ll s n c nt co c nt

Int r st n l t h s n o t hs r l t ons hp s not l s n tv Consu r st phs.

H lt hC r n J t l t s r convnt on ll n tv but En r n t r ls r

r n ll pos t v n In or t on T c nolo s s n c ntl pos t v Cl r l t h

pos t v co c nt r or In or t on T c nolo s

nvers rel t on ur n contr ct on sc pturns pos t v ur n p ns on su st n t pt r s n t s n ustr s c n p ss on t on l n nc n costs n cono c con t ons r robust

n co pos n un p ct c n s n t no n l r t o nt rest nto un p ct c n s n t r l r t o nt rest n un p ct c n s n t n l t on r t o l 2 . scover co p r bl r sults or un nt c p t c n s n t r l r t o nt rest but n t s c s . t r ust our r t r t n s sectors t pt r st t st c ll s n c nt Consu r st pl s n Ut l t s pv s n c nt nvers rel t on b t n stoc r turns n un p ct c n s n t r l r t o nt rest s Emer n t r ls pv s n c nt pos t v rel t on Ho v r . non o t s rel t ons r ns cons stentl s n c nt n o t s s n or t contr ct on n p ns on sub p r o s t pt p t c pt on o Emer Ev n t n t pos t v co c nt n t p ns on p r o s onl r n ll s n c nt

S l rl . t s ns o t rel t on b t n stoc r turns n un nt c p t n l t on r not l s m t v Sp c c ll . n s n c nt m t v co c nts or Consu r st pl s . H lt pC r n Ut l t s n on pos t v rel t on or In or t on T c polo Ho v r . onl Consu r st pl s s cons stent nvers rel t on or bot p cono c sub p r o s su st n t pt un p ct c n s n l t on r n port nt sourc o r s or nvest nts n t Consu r st pl s sector Int rest n l . stoc r turns n t In ustr ls sector r r ctl rel t to un nt c p t n l t on n p ns on p r o s but r nvers l rel t to un nt c p t n l t on n contr ct on p r o su st n t pt r s n t s sector c n p ss on un p ct l t on r costs ur n robust cono c con t ons but r l ss bl to o so ur n pr r cono c t s

In su r . . n t t n t r s n c nt r l t ons b t n stoc r turns n un nt c p t c n s n no n l nt rest r t s n t r co pon nts. un nt c p t c n s n t r l r t o. nt rest n n l t on. t s r l t ons r ost co onl m t v T Consu r St pl s n ustr sector s s t s tan nc ost stron l s t r l t on b t n stoc r turns n un nt c p t c n s n t no n l nt rest r t s s ll s un nt c p t c n s n t n l t on r t r s n c ntl m t v ov r ll n n t contr ct on n p ns on sub pl o s Ev n t r l t on b t n stoc r turns n un pl ct c n s n t r l r t s m t v but s n c ntl so onl or t contr ct on sub pl o n s obs rv t contr r pos t v r l t on or r l T cl rest pl s t In. or t on T c nolo sector Spl c ll . l ll t s n c nt r l t ons b t n stoc r turns n t In. or t on T c nolo sector n un nt c p t c n s n no n l nt rest r t . r l r t n n l t on r t r l s pos t v . t r cons stentl n s n c ntl pos t v ov r ll n n t n t contr ct on n p ns on sub pl o s onl or un pl ct c n s n t no n l r t o. nt rest T m t st p s to s l c n s cov r or nst nc s o. t s n c nt r l t ons ps s urt r r. m our n l ss s b n n or r. m sub sector port ol os

4 2 sults t t sub sector l vel

In t s con st p o. our n l ss. st t o l l n 2 t t sub sector l vel s n m n App n T bl A T bl 5 s s t nu b r n p rc nt o. sub sectors t t v s n c nt r spons o. stoc r turns to un nt c p t c n s n c p ctor no n l nt rest. r l nt rest n n l t on r t n t v r s n c nt co c nt n t v r pos t v n m t v co c nts or c p ctor m l A s s t s n or t on or t nt r s pl p o l m ls B n C r port t s n or t on or t contr ct on n p ns on p o s r sp ct v l

N SE T T AB E 5 AB J T HE E

For bot p o ls. n pos t v n s n c nt r t b t or t tot l

q. t n m t v sp c. c ll . colu n 2 s φ s t pt roun 42 . 33 n 2 7 q. t
sub s ctors or t tot l s ph. contr ct on n p ns on p r o r sp ct v l . v
stoc r turns t pt r s n. c ntl n m t v l r l t to un p ct c n s n t
n. l t on r t

N v rt th ss. t th r so c pt ons to t conv nt on ll nv rs r l t ons
For nst nc. p n l A. colu n 2 r ports t pt t th r s sub s ctors t pt v
s n. c nt pos t v r l t on b t n stoc r turns n un p ct c n s n t
no n l r t q. nt r st n t ov r ll p r o In t on. n t th contr r pos t v
r l t ons or un p ct c n s n t r l r t q. nt r st n s contr r pos t v
r l t ons or un p ct c n s n n. l t on r t or t ov r ll s ph p r o
Br n o n t r sults b sub p r o . obs rv t pt t p 5 p 0 2953 1 5 5 4
7

4 3 esults t n n ustr l v l

As l st step, e r ss o els 1 n 2 t t e n ustr l v l e n e m t e l t ons or t e tot l s pl . contr ct on n e p ns on pr o s n obt n so e r r bl r sults T bl p nel A1 n p nel A2 s ow s t e results or o el 1 n 2 esp ct v l or t e ov r ll pr o n p nels B1, B2, C1 n C2 s ow t e results or o el 1 n 2 or t e contr ct on n e p ns on pr o s esp ct v l All p nels pres nt t e n or t on n t e s e For nst nce, T bl p nel A1, colu ns 2 to 5 s ow b s ctor t e nu b r o n ustr es, t e proport on t t pv s n c nt r spons e to e c p ctor n t e nu b r n ustr es t t pv pos t v n n t v r spons e to e c p ctor esp ct v l Colu n rep orts t e v r e s n c nt co c nt or t e s ctor n t e r n e o co c nt v lu s b s ctor Colu ns 7 n 8 rep orts t e s e o t e v r e pos t v n n t v co c nts

N SE TT AB E AB JT HE E

For bot p o els n ll s p nels ro A1 to C2, ll n ustr es e pl t pos t v n s n c nt r t b t s or t e ov r ll s pl n or t e e p ns on pr o n contr ct on sub pr o s t p ust on nt rest n e c pt on pl ll o t e n ustr b t s ur n t e contr ct on pr o n t e t r ls sub s ctor r pos t v or bot p o els, nels B1 n B2 s ow t t pt onl 11 o 12 n ustr es pv s n c nt b t s T e e c pt on l n ustr s Gol , lon ru our to b n n ustr t t c n prov e s e pv n ur n r c ss ons

o el 1 n p nel A1 rep orts t t t e n ustr l v l, t e r or nst nc s o contr r pos t v r l t ons b t e n sto c returns n un nt c p t c p n es n no n l nt rest r t s In ct, t e v r e n ustr e s n c nt co c nt s pos t v or s o t e n ne s ctors n onl t e pv s n c nt ne t v v r e

co- c nts 7 T s ctors t p t p st nu b r o- n ustr s t ps n- c nt
co- c nts r Consu r St p s t p n v r s n- c nt co- c nt o- 2 8 n
In- or t on T c polo t p n v r s n- c nt co- c nt o- 3 7 n p n
t In ustr ls s ctor. onl on o- t lv n ustr s. n l Bu l n ro uc ts. ps
s n- c nt r l t on to un p ct c p n s n no n l nt r st r t s t p co- c nt o-
4 15 In ustr s n t Em r s ctor p t t p st v r s n- c nt r spons to
un p ct c p n s n t no n l r t o- nt r st

In the above model 2 panel A2, B2 and C2 provide the following interesting observations. First, the stock returns of most industries have no significant relation to the unexpected component in the real interest rate. For instance, in the overall all period only 18% of industries have significant coefficients of the real interest rate. The stock returns of all industries in the Healthcare sector does not have significant relation to unexpected component in the real interest rate. There are four industries that have significant stock returns in unexpected component in the real interest rate. These industries are 21 and 11 respectively. Clearly, the stock returns

n contr ct on p r o 12 58 s r s n t F n nc ls s ctor pv t p st
v r r spons n t p ns on p r o 4 5 In contr st, n ustr s n t Consu r
D scr t on r s ctor pv t lo st v r r spons to un p ct c pn s n t
n l t on r t r or t tot l s p 29 p n ustr s n t t r ls s ctor pv
t lo st r spons n t contr ct on c t p T n 295585 1 2312 2 1 43 o 295

It s r r b t pt stoc r turns r nv rs l r l t to un r p ct r n l t on r or t Gol n ustr . t r b n t i q. Gol s i nst n l t on Anot r nt rf rst n r sult s t pt t stoc r turns n t Gol n ustr r not s n r c ntl r l t to t r t r turn ur n contr ct on cono c p r o s t r b bolst r n Gol s r put t on s s r pv n ur n r c ss on r con t ons

Int rf rst n l . i r n t pt nv st nts n t i n ustr i s. sp c r c ll Int r t l n G s. Co i rc l s rv c s n uppl i s n D v rs r i i t ls n n n c n prov i s r pv n nst un r p ct c pn i s n t r l r t q. nt rf rst p c r c ll . i r n t pt t stoc r turns n t i s n ustr i s pv cons st ntl pos t v r l t on t pun r p ct c pn i s n t r l r t q. nt rf rst r or t ov r ll. contr ct on n i p ns on p r o s T s su i sts t pt nv st nts n t i s n ustr i s ll t n to nc r s r r l r t s q. nt rf rst un r p ct l r s t r b q r s tt n i tr costs

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Business Cash Expansions and Contractions

Period	Status and Economic Forecasts
November 1989 – June 1990	Expansion – 8 months
July 1990 – February 1991	Contraction – 8 months
March 1991 – March 2001	Expansion – 121 months
April 2001 – November 2001	Contraction – 8 months
December 2001 – December 2007	Expansion – 73 months

Co[illegible] c[illegible]nts o[illegible] s[illegible]ctor stoc[illegible] r[illegible]turns to v[illegible]r[illegible] t ons n no[illegible] n[illegible] nt[illegible]r[illegible]st r t[illegible]s [illegible] o[illegible]l 1
n r[illegible] l nt[illegible]r[illegible]st n [illegible] p[illegible]ct[illegible] n[illegible] l t on r t[illegible]s [illegible] o[illegible]l 2
[illegible]m[illegible]l A T ot l s p[illegible][illegible]ro N ov 1989 to F[illegible]b 20[illegible]14

	o			o		
Sector	r_{mt}	Δi_t^u	***Ad. R^2***	r_{mt}	Δr_t	([illegible] l)

Co nts o. sub sctor stoc rturns to v r t ons n no n l nt rst r ts o l
l n r l nt rst n p ct n l t on r ts o l 2 rc nt o. sub sctors t p
s n c nt posur
m l A T ot l s pr ro N ov 1989 to F b 2 14

o		
r_{mt}	Sub sctors t ps n c l	Av r Co
S n c nt Co	33	1 11
os t v Co	33	1 11
t v Co		n
i_t^u	Sub sctors t ps n c l	Av r Co
S n c nt Co	14 42 42	545
os t v Co	18 18	2 499
t v Co	8 24 24	2 828
Av r A ^{2} 45 21		

o		
r_{mt}	Sub sctors t ps n c l	Av r Co
S n c nt Co	33	1 11
os t v Co	33	1 11
t v Co		n
r_t	Sub sctors t ps n c l	Av r Co
S n c nt Co	21 21	125
os t v Co	73 9 9	1 415
t v Co	4 12 12	1 28

$\Delta E_t^{ORT}(\ _{t,t+1})$

	32 9 9	9 5
	32 9 9 7 7	9 5

6 Co- c-nts o- n ustr stoc r-turns to v r t ons n no n l nt-r-st r t-s o-l l n r- l nt-r-st n -e p-ct- n.l t on r t-s o-l 2 S n-. c nt n ustr s-ns t v t -j m-l A l o-l l Tot l s pl- r-.ro Nov 1989 to F-b 2014

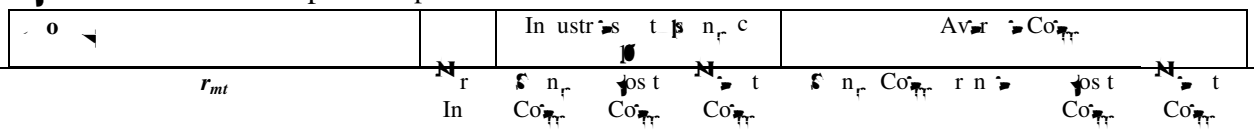
o		In ustr-s t js n-. c		Av-r -e Co-.		
r-mt	r In	S n-. Co-.	os t Co-.	-e t Co-.	S n-. Co-. r n -e	os t Co-.	-e t Co-.
In ustr-s o-. S1 Consu D sc-t on r	1	1 /1	1		1 9 .91 .. 1 44	1 9	n
In ustr-s o-. S2 Consu -r S t pl-s	9	9/9	9		.49 422 .. 1 54	.49	n
In ustr-s o-. S3 En-r	7	/7	7		1 11 .5 .. 1 328	1 11	n
In ustr-s o-. S4 F n nc ls	11	11/11	11		1 351 834 .. 2 1 3	1 351	n
In ustr-s o-. S5 H-l lt C r-	5	5/5	5		.31 .49 .95	.31	n

7 7 7

In ustr s q. 1 Consu D scr t on r	1	1 /1	1		1 31 448. 2 11	1 31	n
In ustr s q. 2 Consu r t pr s	9	9/9	9		84 451. 1 38	84	n
In ustr s q. 3 Em r	7	/ 7 7	7		9 9 5. 1 29	9 9	n

In ustr s o. 1 Consu D scr t on r

In ustr s o. l Consu D scr t on r							



Sector/Subsector	Industries
Financials	
8301 Banks	I1 Commercial Banks I2 Thrifts & Mortgage Finance
8302 Diversified Financials	I3 Diversified Financial Services I4 Consumer Finance I5 Capital Markets
8303 Insurance	I6 Insurance Brokers I7 Life & Health Insurance I8 Multi-line Insurance I9 Property & Casualty Insurance
8304 Real Estate	I10 Real Estate Investment Trusts (REITs) I11 Real Estate Management & Development
Health Care	
8351 Health Care Equipment & Services	I1 Health Care Equipment & Supplies I2 Health Care Providers & Services
8352 Pharmaceuticals, Biotechnology & Life Sciences	I3 Biotechnology I4 Pharmaceuticals

F r Evolut on o. t -a nnu l ro t p t o. GD -j r s son l ust nt