



# Consequences of Model Choice in Predicting Horizontal Merger Effects

Matthias Panhans and Charles Yragin  
Federal Trade Commission

**kykk@yd@RR**

**#bi` +i**





+ HB#` i2/ /2K M/ T TTK2i2+ b- mb2b b BMTmib i?2 T`B+2b M/ K `I  
HbQ bbmK2b i? i i H2 bi bQK2 }`K +Qbib `2 HbQ Q#b2`p2/X h?  
M/ ;Bp2M KQ/2H Q7 +QKT2iBiBQM- i?Bb TT`Q +? 2Mi BHb + HB#  
`2 +QMbBbi2MirBi? i?Qb2 K `F2i+? ` +i2`BbiB+eb M/i?2 KQ/2H Q



q ... 7 'r A q' ... 7 'r

URV

r?B+? vB2H/b ;2M2` H 7Q`K Q7 }`bi Q`/2` +QM/ BiBQM,

7 v A q' ... 7 'r A %' % v A % ® q' ... 7 'r

.../2MQi2b i?2 miBHBiv iQ i?2 #mv2` BM i?2 + b2 Q7 #`2 F/QrM B  
#mv2` M/ i?2 bmTTHB2` bGBE 2TrBQ2-iQ i?2 bmTTHB2` BMB /Bb ;`2  
i?2 #`; BMBM; TQr2` Q7 i?2 #mv2` - M/ BM i?2 KQbi ;2M2` H 7Q`K  
T`Q/m+i +QK#BM iBQMbc 7Q` KQbi Q7 i?Bb T T2`- ?Qr2p2`- r2 rB  
+`Qbb #ñ U/DV)SD 7  
#ñ U/DV)SD 7 T`Q/m+ib- 7Q` #ñ U/DV)SD

k X 7 R/DW)SD 7SD 7 ñ U/ a+A3ID BMBM ; JQ/2H  
RQ aRS 3M ... -L b b? €

V&Pbm v 2 b M ð ? Q  
...

" ...  $\frac{2t\hat{A}_0 \hat{z}'_0}{\hat{A} \hat{\rho}_p \hat{A}_p \hat{z}'_p}$  / 2MQi2b i?2 GQ; Bi T`Q# #BHBiv i? i #mv2` 2Bi?2` +?C  
 7Q` Bib b mTTHv ;` 22K2Mi- Q` BMbi2 / b2H2 # MQMKQH B B // 2QYTXBAQ  
 i?Bb +QM i B bi BMi2` T` 2i2/ b T`Q# #BHBiv Q7 #2BM; +?Qb2M BM  
 i?mb i?2 T`Q}ib b?QmH/ #2 BMi2` T` 2i2/ b 2tT2+i2/ T`Q}ibX h?Bb  
 mb2/ BM Qi?2` +QM i B bi BMi2` T` 2i2/ b b? `2 Q7 [m MiBiv  
 /2`Bp iBQM b rBHH biBHH ?QH/ rBi? QMHv "X M;2 BM i?2 BMi2` T`  
 6m`i?2` - H2  $\frac{\hat{z}_p}{\hat{A} \hat{z}'_p}$  / 2MQi2 i?2 /Bb ;` 22K2Mi +?QB+2 T`Q# #B B B @B2b r  
 +Hm/2/ 7`QK i?2 +?QB+2 b2iX h?2 #mv2`  $\frac{\hat{A}_i}{7 \hat{z}'_i}$  i Q Q z b m b 2i K i # r B v 2 H B 2 B #  
 BMiQ /QHH ` r k M B B b i 2 / K ` ; BM H miBHBiv Q7 BM+QK2X LQi2 i? i

$$\begin{aligned} & \dots 7 \dots \frac{HME7\hat{z}}{\hat{z}} \\ & \frac{\hat{Y} \hat{z}_0^w}{\hat{Y} \hat{z}_0} 7 \dots \\ & \frac{\hat{Y} \hat{z}_0}{\hat{Y} \hat{z}_0} \bullet \dots \dots 7 \dots A k \dots 7 \dots 7 \hat{\rho}_{t n x_s} \dots t 7 t A k \dots t, \end{aligned}$$

q2 i?2M ? p2 HH i?2 M2+2bb `v i2`Kb iQ bT2+B7v i?2 6P\* 7`QK i?2  
 `2+ HH 7`QK #Qp2 Bb ;Bp2M #v,

$$7 \hat{v} \dots A \hat{d} \dots 7 \dots r \frac{\%_0 \dots}{\%_0 \dots} \hat{v} \dots A \dots \frac{\%_0 \dots}{\%_0 \dots}$$







kXkXR JQ/2H a2imT

i + Qbi

b + QMb2[m2M+2- bmTTHB2` T vQz BM.../Bx ;`22K2Mi Bb x2` Q

"... - M/ MQr X

a? `2b KB;?i #2 7mM+iBQM Q7 +Qbib M/ MQi 2[mBHB#`BmK T`B  
T`B+2 rBHH MQi /B`2+iHv z2+i /QrMbi`2 K /2K M/X \_ i?2` - i?2 M2;  
QMHv iQ bTHBi }t2/ KQmMi Q7 ;`22K2Mi bm`THmb- M/ i?2M i?  
7mM+iBQM QMHv Q7 +Qbib- rBi? KQ`2 2{+B2Mi bmTTHB2`b #2BM;  
AM i?2 b2+QM/ b+Q`2 # `; BMBM; T`Q#H2K- /2}M2,

' ...7 ... A..."

'  
...

•  $\frac{A}{7} \acute{u} K t \eta k \dagger \mathcal{P} r B \triangleright M \frac{A}{7} U \eta k A \dots m 7HQ \dots V$

•  $\frac{A}{7} \acute{u} K t \dots \eta k \dagger \mathcal{P} r B \triangleright M b$

q2 b2i'





v... - i?2 6P\* bBKTHB}2b iQ

•7 •

#2+ mb2 Bi Bb Hr vbi?2 + b2 i? i  
%oo'  
%oo...

h?Bb ;Bp2b bQHmiBQM 2t +iHv 2[m HiQ i?2 b~~2~~+QM/ b+Q`2 m+iB

kXkXk GQ;Bi 1[m iBQM b 7Q` aBKmH iBQM

+ HB#` i2/ /2K M/ T TTK2i2`b- i H2 bi QM2 }`Köb K`  
+Qbib M22/ iQ #2 Q#b2`p2/X h?2 BMTmib `2 T`B+2b- K `F2i b? `2  
7Q` T `iB+mH `K `F2i- M/ ;Bp2M KQ/2H Q7 +QKT2iBiBQM- /2K  
iQ #2 +QMbBbi2Mi rBi? i?2 BMTmib M/ i?2 KQ/2H Q7 +QKT2iBiBQ  
AM i?Bb b2+iBQM- r2 b?Qr `2H iBQMb?BTb Q7 KQ/2H T ` K2i2`b +  
/2K M/ T ` K2i2` M/ + HB#` i2/ /2K M/ T ` K2i2` bi` i2;vX h?2 `2  
K2Mi Q7 i?2 /2K M/ T ` K2i2`b K ii2`b Bb #2+ mb2 ?Qr i?2b2 KQ/2H  
KQ/2Hb Bb /Bz2`2Mi mM/2` i?2 }t2/ /2K M/ T ` K2i2`b p2`bmb i?2  
` K2i2`b TT`Q +?X AM i?2 M2ti b2+iBQM r2 mb2 MmK2`B+ H bBK  
/Bz2`2M+2b BM i?2b2 KQ/2H T ` K2i2`b z2+i K2`;2` Qmi+QK2bX  
6B`bi- r2 2tTHQ`2 i?2 `2H iBQMb?BT BM i?2 KQ/2Hbö T`2/B+i2/ K  
i?2 /2K M/ T ` K2i2`b `2

6m`i?2`KQ`2 $\frac{\dot{E}}{AE}$ ?2HM;7 " $\frac{AE7\check{z}}{Z_0}$  - i?2 7mHH Q`/2`BM; +`Qbb KQ/2Hb E

} %} ð| ð}  
... ..  
} %} ð| ð}  
... ..

S`QQ7X





K `F2i b? `2'... - T`B+2 - K `;BM - M/ # `; BMBM; TQr2` T ` K2  
v n -

k} k %o}  
k} k õl k õ}

6m`i?2`KQ`2v-BB2HM`;2 2MQm;? `2H iBp2 iQ<sup>Ê</sup>22-<sup>Æ</sup>?<sup>Æ.7Z</sup>2H<sup>z</sup>Q b`iB b7v  
i?2M i?2 7mHH Q`/2`BM; +`Qbb KQ/2Hb Bb,

k} k %o} k õl k õ}

S`QQ7X



k TT`Q +?2b x2`Q- /2K M/ BM i? i KQ/2H #2+QK2b KQ`2 BM2  
Q`/2`BM; Q7 i?2 K kMBbQ/BHQ7  
2z2+ib +`Qbb KQ/2Hb BM i?2 + HB#` i2/ /2K M/ T ` K2i2`b TT`Q  
QmibB/2 QTIBQM i? i K F2b 7Q` /2+2Mi bm#biBimi2- /2K M/ 2H bi  
K2`;2` BM i? i KQ/2H rBHH #2 bK HHX q?2M /2K M/ Bb BM2H biB+  
Hi2`M iBp2 7Q` i?2 }`Kb BM i?2 K `F2i- M/ ? `K 7`QK K2`;2` ? b b  
h?Bb T`QTQbBiBQM b?Qrb i? i 2p2M 7Q` i?2 b kKr2BIMT#2iB Mi T2`+  
/`Bp2M #v i?2 KQ/2H Q7 +QKT2iBiBQMX

9 LmK2`B+ H aBKmH iBQM b

}t2/

/2K M/ T ` K2i2`b2;v- r?B+? mb2b i?2 /2K M/ T ` K2i2`b 7`QK i?2  
KQ/2H- M# i?B#` i2/ /2K M/ Tbì`Ki2i;2`br?B+? + HB#` i2b /2K M/ T `  
7`QK i?2 2[mBHB#`BmK K `;BM +QM/BiBQM Q7 2 +? KQ/2HX 6Q` /2  
2t2`+Bb2- b22 TT2M/Bt X

1 +? K `F2i ? b i?`22 / i 2H2K2Mib, UBV T`B+2b M/ b? `2b- UBBV  
T ` K2i2`bX q?2M ;2M2` iBM; i?2 ` r / i 7Q` i?2 MmK2`B+ H bBKm  
i?`22 2H2K2Mib 7Q` 2 +? K `F2i mbBM; "2`i` M/ KQ/2H- bQ i? i i?2  
rBi? 2 +? Qi?2` rBi?BM i? i +QKT2iBiBp2 2MpB`QMK2MiX hQ +QK  
KQ/2Hb- QMHv irQ 2H2K2Mib + M #2 i F2M b BMTmib- r?BH2 i?2  
`2+Qp2`2/ iQ #2 +QMbBbi2Mi rBi? i?2 KQ/2H M/ i?2 irQ BMTmi 2H2  
T ` K2i2`b TT`Q +?- 7Q` 2 +? K `F2i r2 i F2 i?2 UBV T`B+2b M/ UBBV  
T ` K2i2`b b BMTmib- M/ # +F Qmi UBBV +Qbib iQ #2 +QMbBbi2  
+QKT2iBiBQMX AM i?2 + HB#` i2/ /2K M/ T ` K2i2`b TT`Q +?- r2  
M/ UBBV QM2 }`Köb +Qbi b i?2 / i BMTmib- M/ + HB#` i2 i?2 UB  
+QMbBbi2Mi rBi? i?2 ;Bp2M KQ/2H Q7 +QKT2iBiBQMX

---

<sup>N</sup>h?2`2 Bb i?B`/ TT`Q +?- r?B+? Bb iQ i F2 UBBV +Qbib M/ UBBBV /2K M/ T ` UBBBV T`B+2b M/ b? `2b 7Q` 2 +? KQ/2HX q2 /Q MQi +QMbB/2` i? i TT`Q +? B





X h?2 H27i T M2H BM 6B.

v BM+`2 b2bX

>Qr2p2`- mMHBF2 +QMbmK2` bm`THmb- i?2 # `; BMBM; TQr2` Bb  
i? M +QMbmK2` ? `KX 6Q` 2t KTH2- mM/2` i?2 L b? # `; BMBM; K  
K M/ T ` K2i2`b- K2/B M +QMbmK2` ? `K r?2M i?2 # `; BMBM; TQ  
djW bK HH2` mM/2` i?2 L b? # `; BMBM; KQ/2H i? M i?2 "2`i` M/ K  
# `; BMBM; T ` K2i2` BM+`QMbmK2` ? `K #2+QK2b NyW bK HH2`X

---

---

---

v

v B b i?2 b K2 7Q` HH }`Kb- i?2 KQ/2H@  
T ` K2i2`b vB2H/ B/2MiB+ H `2bmHib 7Q` i?2 b2+QM/ b+Q`2 m+iB  
KQ/2HbX

e \* Q M + H m b B Q M







" B # H B Q ; ` T ? v

IMBi2/ ai i2b pX 2iM - k9y 6X amTTX j/ R U.X.X\*V

IMBi2/ ai i2b pX Mi?2K- AM+X- kje 6X amTTX j/ RdR U.X  
6Xj/ j98 U.X\* \*B`X kyRdV

h?2 CQm`M H Q7 G r- 1+QMqKB

P`; MBx kBQMV, jdk NNX

IMBi2/ ai i2b pX " x `pQB+2- AM+X- \* b2 LQX Rj@+p  
\* HXV

ai i CQmRUV, 8RR 89yUjyVX

J `F2iBM; a kBUV, 8d d9X

h?2 "X1X CQm`M H Q7 h?2Q`2iB+ H

Ry URVX

J2 bm`BM; J `F2iSQR/ #v . MB2H CQM i? M aHQiiD2X 1Hb2p

K2`B+ M 1+QMqKB y8\_URV2r

Rdk kyjX

K2i`B3+8 UkV, jdN 9RdX ?iiTb,ff/QBXQ`;f

IMBi2/ ai i2b pX > \_ "HQ+F- AM+X- 3jj 6X amTTX k/ je

AMi2`M iBQM H

CQm`M H Q7 AM/mbi`B dH RYR MBx?iiTb,ff/QBXQ`;f

:2Q`;2iQrM J+.QMqM;? a+?QQH Q7 "mbBM2bb \_2

jej8kX8?iiTb,ff/QBXQ`;f

h?2 \_ L. CQm`M H Q7 8k QMQ MB ebejkX ?iiTb,ff/QBXQ`

\_2pB2r Q7 AM/mbi`B H dPU;9MB d8 B QNR X

6h\* pX avb+Q \*Q`TX- RRj 6X amTTX j/ R U.X.X\*V

MiBi`mbi, hQQHb 7Q` MiBX`mbi S`

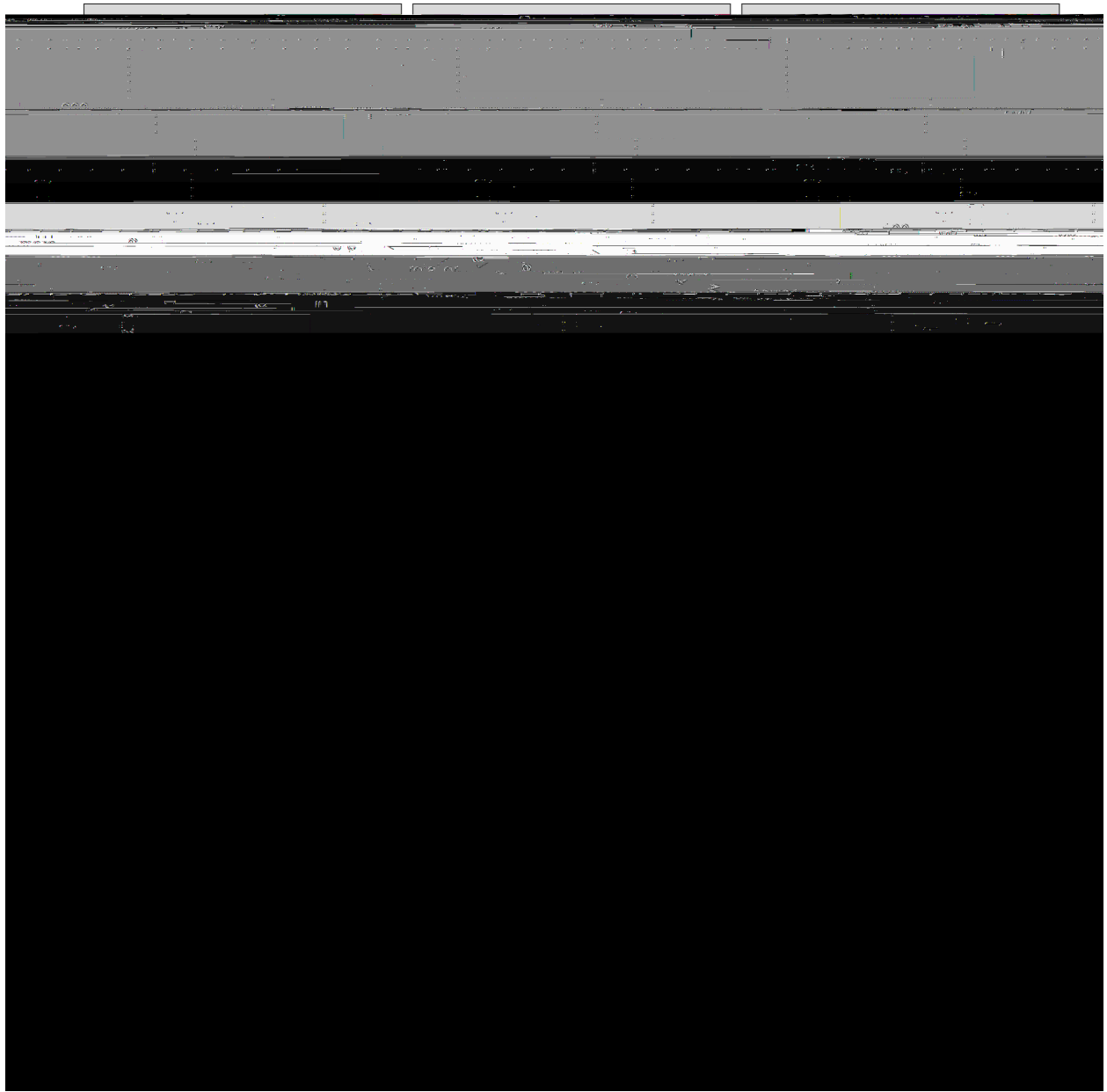
\_2pB2r Q7 AM/mbi`B H dPU;RM B R d B QNR kX

CQm`M H Q7 G r- 1+QMqKB+

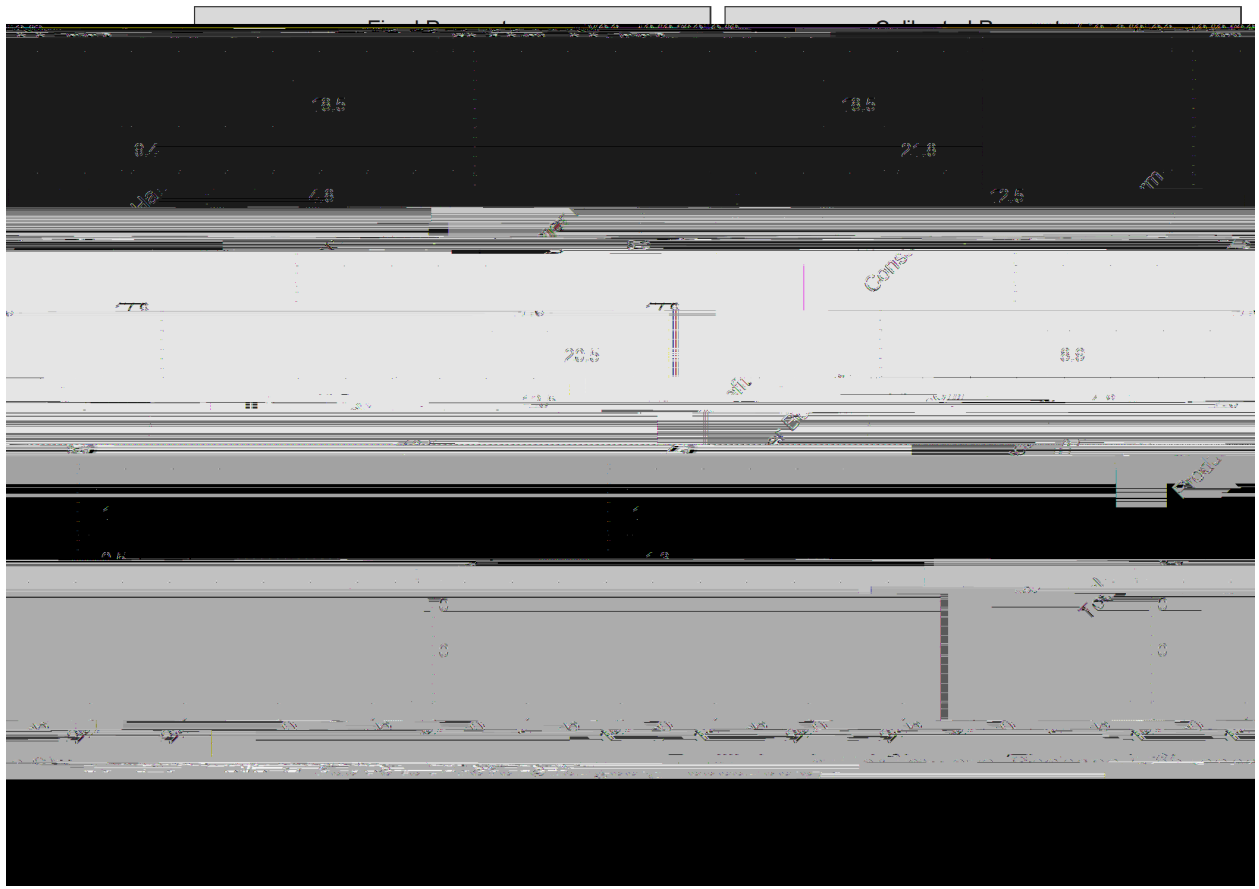
P`; MBx RBQNV, 9yd keX

MiBi`mbi G r Q r W ,Hk8d eyX





vÆ - r?BH2 i?2 # `; BMBM; T ` K2i2` 7Q` i?2 Qi?2` }`Kb E  
tBbX Pmi+QK2b `2 2tT`2bb2/`2H iBp2 iQ i?2 Ź b?`#2`i7 M/ Qmi+  
ú #€...|‰. ú c#...|‰ X \_2/ UH27iV THQib /2TB+i Qmi+QK2b mbBM  
i2`b + HB#` i2/ 7`QK i?2 "2`i` M/ JQ/2H- r?BH2 i?2 #Hm2 U`B;?iV T  
/2K M/ T ` K2i2`b + HB#` i2/ 7`QK i?2 +Q``2bTQM/BMf; MQ/2HXq?  
`fT2`+2MiBH2b Q7 T `iB+mH ` Qmi+fQ M2-`# Q22b2 MTBH2b?2 M/i?  
bQHB/ ?Q`BxQMi H HBM2 /2TB+ib i?2 K2/B MX



LmK2`B+ H aBKmH iBQM

XR . i :2M2` iBM; S`Q+2bb U.:SV

Y3@ b?



k M/ T`B+2b M/ b? `2b-nK-2 M #2H@-2Qp2`2/  
7`QK i?2 GQ;Bi b? `2 2[m iBQMX

Xk \* HB#` iBQM ai` i2;B2b

}t2/ /2K M/ T ` K2i2`b

TT`Q +? U`2/ #Qt M/ r?BbF2` THQibV- r2 i`2 ii?2 /2K M/ T ` K2i2  
i`m2 mM/2`HvBM; T ` K2i2`b M/ +QM/m+i K2`;2` bBKmH iBQMb +?  
iBQM #mi ?QH/BM; i?2b2 T ` K2i2`b B#2/ X2VM2K M/2T TTK Q i2`b  
U#Hm2 #Qt M/ r?BbF2` THQibV- r2 BMbi2 / i`2 ii?2 K `F2i T`B+2  
K `;BM 7`QK i?2 .:S b Q#b2`p2/- mb2 i?Qb2 BMTmib iQ + HB#` i2 /  
KQ/2H b2T ` i2Hv- M/ i?2M +QM/m+i K2`;2` bBKmH iBQMb ?QH/BM  
#mi rBi? /2K M/ T ` K2i2`b p `vBM; +`Qbb KQ/2HbX

h?2 M im`2 Q7 i?2 irQ /Bz2`2Mi i`2 iK2Mib Q7 i?2 /2K M/ T ` K2i2  
TT`Q +? mb2b /Bz2`2Mi BMTmib 7`QK i?2 .:SX h?2 }t2/ /2K M/ T `  
b i?2 BMTmi i?2 T`B+2b M/ b? `2b 7`QK i?2 .:S-MM/7Q2 i?Qi`2bTQ  
K `F2iX JQ/2H@bT2+B}+ K `;BM H +Qbib `2 `2+Qp2`2/ 7`QK i?2  
+Q``2bTQM/BM; KQ/2H- T`QpB/BM; i?2 }M H `2[mB`2K2Mi 7Q` K  
i?2 + HB#` i2/ /2K M/ TT`Q +?- i?2 K `F2i T`B+2b M/ b? `2b 7`QK  
K `;BM Q7 i?2 QmibB/2 ;QFM b i?2 BMTmibX h?2 BQ/2+Qp2T2+B}  
7`QK i?2 QmibB/2 }`Köb 2[mBHB#`i BmKK i?;BM 2[m+BQMXp2H GQ;B  
p Hm iBQM#2 `2+Qp2`2/ 7`QK i?2 GQ;Bi b? `2 2[m iBQM M/ i?2  
T`B+2bX 6BM HHv- KQ/2H@bT2+B}+ BMbB/2 ;QQ/ K `;BM H +Qbib  
M/ i?2 2[mBHB#`BmK K `;BM 2[m iBQM- T`QpB/BM; i?2 `2[mB`2/

---

Ri6Q` i?2 b2+QM/ b+Q`2 m+iBQM KQ/2HXi00b iB2 " `; BMBM; KQ/2Hb- r2 bb  
2Bi?2` 2[mj QBCQ H/b 7Q` i?2 QmibB/2 }`K BM i?2 TÊ @ KX;2` bi i2- rBi?



BMbB/2 }`Kb z2+ib K2`;2` Qmi+QK2b #v bTHBiiBM; i?2 8yy-yy  
Q7 8y-yyy M/ i?2M bbmKBM; i? i i?2 BMbB/2 }`Kb BM 2 +? ;`QmT

" S`QQ7b

"XR S`QQ77Q`S`QjKQubBIB2QM2K M/T`K2i2`bVX

k-n- - M7X G2i v . X

6B`bi- r2 b?Q} i?%}X 6`QK 2[m iBQM

$$\dots 7 \dots 7 \dots 7 \dots A \dots \quad \dots 7 \dots 7 \dots \quad \frac{\frac{\frac{A}{E} AH Q; 7 \dots}{\dot{\iota}}}{7 HQ; 7 \dots} \quad \frac{\frac{E}{AE 7} \dot{\iota}}{AE 7 \dot{\iota}}$$

1[mBp H2MiHv-

$$\dots \dots 7 \dots \quad \frac{\frac{\frac{A}{E} AH Q; 7 \dots}{\dot{\iota}}}{7 \quad 7 \dots HQ; 7 \dots} \quad \frac{E}{AE 7} A \dots$$

U8V

AM "2`i`vM/-- M/ bQ i?2<sup>E</sup>AK"BM i?2 /2MQKBM iQ` /`QTb QmiX AM  
 KQ/2H rBi? Mvi?Bb i2`K BM i?2 /2MQKBM iQ` Bb TQbBiBp2X h?m  
 Q7 1[m iBQM

} ... %}L p v X aBM+2 T`B+2b} `2%} p2X-

a2+QM/- r2 b?Q}r i?%}X 6`QK 2[m iBQM

$$\dots \dots 7 \dots \quad \frac{7 \dot{\iota} A \acute{u} \quad ' \dot{u}}{7 k}$$

UeV

AM i?2 b2+QM/ b+Q`2 m+iBQM- i?2 K `;BM Bb ;Bp2AM#vb2BQM[m  
 b+Q`2 # `; BMBM; KQ/2H riB?K MyBM Bb ;Bp2M /B`2+iHv #v i?Bb 2[  
 7 v - Mú 'ù Bb i?2 b K2 mM/2` #Qi? KQ/2Hb- Bi Kmbi #2

}L p v X aBM+8 2M Köä! •Rñl=bi #2 1-b `2 }t2/)

ó| A ú 'ù A ← " ... †pxo >

U3V

M/ MQi2 i? i 7 Q` bBM;H2@T' Qú m† }`K- 7HQ;7 " ... HQ; 7  
" ... X hñC@ • 1fho3 s Qu2P çvñ-I gĐTđ HQ; HQ;

%} ð|  
...

$$H \frac{\frac{\frac{7}{7} \text{HQ}; 7 \dots}{7} \frac{\frac{7}{7} \text{HQ}; 7 \dots}{7} \frac{\frac{7}{7} \text{HQ}; 7 \dots}{7}}{\frac{7}{7} \text{HQ}; 7 \dots} - k \frac{7 \text{ A} \frac{\frac{7}{7} \text{HQ}; 7 \dots}{7} \frac{\frac{7}{7} \text{HQ}; 7 \dots}{7} \frac{\frac{7}{7} \text{HQ}; 7 \dots}{7}}{\frac{7}{7} \text{HQ}; 7 \dots}$$

$$H \frac{7 \text{ HQ}; 7 \dots}{7 \text{ HQ}; 7 \dots} \frac{7 \text{ A} \frac{\frac{7}{7} \text{HQ}; 7 \dots}{7} \frac{\frac{7}{7} \text{HQ}; 7 \dots}{7} \frac{\frac{7}{7} \text{HQ}; 7 \dots}{7}}{\frac{7}{7} \text{HQ}; 7 \dots}$$

$$H \text{ HQ}; 7 \dots \text{ A} \dots \frac{7 \text{ A} \frac{\frac{7}{7} \text{HQ}; 7 \dots}{7} \frac{\frac{7}{7} \text{HQ}; 7 \dots}{7} \frac{\frac{7}{7} \text{HQ}; 7 \dots}{7}}{\frac{7}{7} \text{HQ}; 7 \dots} \frac{7 \text{ HQ}; 7 \dots}{7 \text{ HQ}; 7 \dots} \frac{v}{7 v} \text{ A} \dots$$

$$H \text{ HQ}; 7 \dots \text{ A} \dots \frac{7 \text{ A} \frac{\frac{7}{7} \text{HQ}; 7 \dots}{7} \frac{\frac{7}{7} \text{HQ}; 7 \dots}{7} \frac{\frac{7}{7} \text{HQ}; 7 \dots}{7}}{\frac{7}{7} \text{HQ}; 7 \dots} \frac{7 \text{ HQ}; 7 \dots}{7 \text{ HQ}; 7 \dots} \frac{v}{7 v} \text{ A} \dots$$

$$H \dots \frac{7 \text{ HQ}; 7 \dots}{7 \text{ HQ}; 7 \dots} \frac{v}{7 v} \text{ A} \dots$$

$$H \dots \frac{7 \text{ HQ}; 7 \dots}{7 \text{ HQ}; 7 \dots} \frac{v}{7 v} \text{ A} \dots$$

$$H \frac{7 \text{ HQ}; 7 \dots}{7 \text{ HQ}; 7 \dots} \frac{v}{7 v}$$

$$H \frac{7 \text{ HQ}; 7 \dots}{7 \text{ HQ}; 7 \dots} \frac{v}{7 v}$$

$$H \text{ HQ}; 7 \dots \frac{v}{7 v} \frac{7}{7} \checkmark$$

$$H \frac{7 \text{ HQ}; 7 \dots}{7 \text{ HQ}; 7 \dots} \frac{v}{7 v} \checkmark$$

$$H \frac{v}{7 v} \text{ HQ}; 7 \dots \frac{7}{7} \dots$$

"Xk S`QQ7 7Q` S` QjXQub` B`BQ/M i2/ /2K M/ T ` K2i2`bVX

... .. "X q2 rBHH b?Qr mM/2` r?k)i +Q M/ B`i B Q M bBHH ?QH/X

6B`bi- r2 b?Qr i?k} 7Q` vHrH X "2+ mb2 T`B+2b M/ +Qbib `2 }t2

KQ/2Hb- K `;B Mb `2 HbQ }t2/ +`Qbb KQ/2HbX h?mb r2 ? p2 i? i,

$$6 \frac{\frac{\frac{\epsilon}{\zeta^{SG}} \text{AHQ}; 7 \dots}{7 \quad 7 \dots \text{HQ}; 7 \dots} \frac{\frac{\epsilon}{\epsilon 7 \epsilon} \text{A} \dots}{7 \quad 7 \dots \text{HQ}; 7 \dots}}{\frac{\frac{\epsilon}{\zeta^G} \text{AHQ}; 7 \dots}{7 \quad 7 \dots \text{HQ}; 7 \dots}} \frac{v}{7 v} \dots$$

"2+ m<sup>ε</sup>2" h?Bb BKTH B}2 bki?Xi

a2+QM/- r2 b?Qr i?k<sup>o</sup> 7Q` vHH X

$$6 \frac{\frac{\acute{u} \quad \grave{u}}{7 k^{\acute{o}}}}{\frac{\acute{u} \quad \grave{u}}{7 k^{\acute{o}}}} \frac{7 v \acute{u} \quad \grave{u}}{7 k^{\acute{o}}}$$

$$6 k^{\acute{o}} \acute{u} \quad \grave{u} \quad \acute{o} \quad k^{\acute{o}} \quad 7 v \acute{u} \quad \grave{u} \quad \acute{o}$$

$$6 k^{\acute{o}} < 7 \text{HQ}; 7 \dots > \acute{r} \quad 7 v < 7 \text{HQ}; 7 \dots >$$

$$6 k^{\acute{o}} \quad k^{\acute{o}} \quad 7 v \quad 6 k^{\acute{o}} \quad k^{\acute{o}}$$

6BM HHv- r2 b?Qr i?2 +QM/Bk<sup>o</sup> BQM k<sup>o</sup> M/2` r?B+?

$$6 \frac{\frac{\frac{\epsilon}{\zeta^{SG}} \text{AHQ}; 7 \dots}{7 \quad 7 \dots \text{HQ}; 7 \dots} \frac{\frac{\epsilon}{\epsilon 7 \epsilon} \text{A} \dots}{7 \quad 7 \dots \text{HQ}; 7 \dots}}{\frac{7 \text{HQ}; 7 \dots}{7 k^{\acute{o}}}} \frac{v}{7 v} \text{A} \dots$$

h?Bb K2 Mb i? i

$k^{\%o} \} k^{\tilde{o}l}$

$$H \cdot 7 \quad 7 \text{ " } \dots \text{ HQ; } 7 \text{ " } \dots \quad \frac{v}{7 \ v} \ A \ \dots \ \tilde{Z}$$
$$H \quad \frac{v}{7 \ v} \quad \dots \quad \frac{7 \ \text{"}}{\text{" } \dots} \dots \text{HQ; } 7 \ \text{" } \dots$$