

-QVLJKWV 6HULHV

:KR 6XSSRUWV 6WDWH 2ZQHUVKLS RI -  
LQ WKH \$PHULFDV"

(OLJDEHWK 1D\ORU  
9DQGHUELOW 8QLYHUVLW\  
HOLJDEHWK M QD\ORU#YDQGHUELOW HGX

2FWREHU

.H\ )LQGLQJV

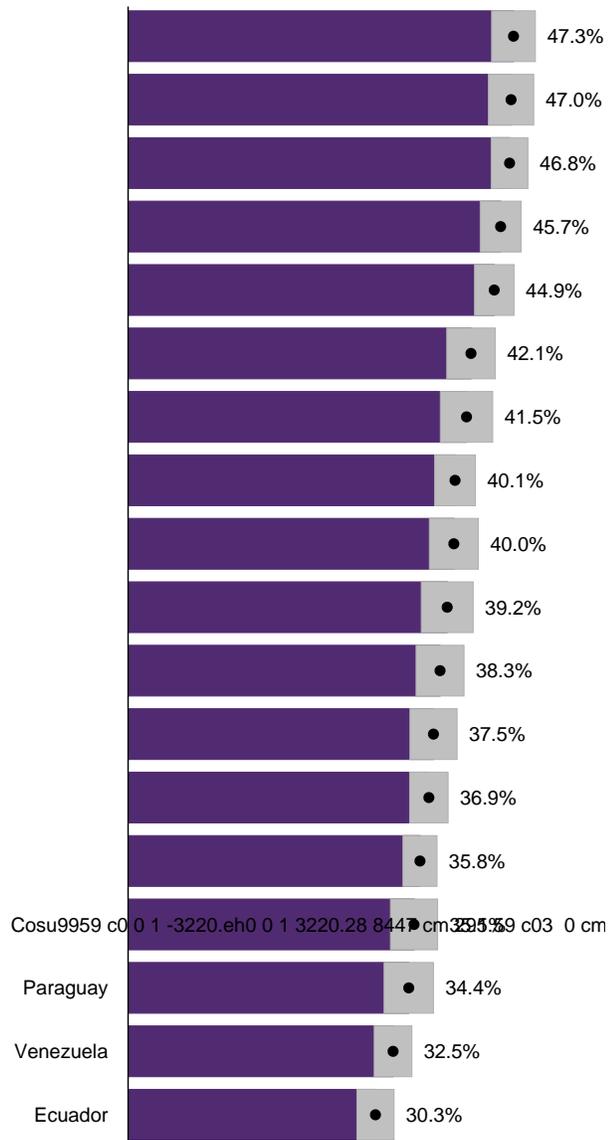
:HDOWKLHU LQGLYLGXDOV DQG WKRVH ZKR DUH EHWWHU HGXFDWHG DU  
VWDWH RZQHUVKLS RI LPSRUWDQW LQGXVWULHV

%HOLHYLQJ WKH JRYHUQPHQW LV DOUHDG\ PDQDJLQJ WKH HFRQRP\ ZH  
SUHGLFWRU RI VXSSRUW IRU VWDWH RZQHUVKLS RI LQGXVWU\

-QGLYLGXDOV ZLWK KLJK OHYHOV RI WUXVW LQ WKH FXUUHQW SROLW  
SRUWLYH RI VWDWH RZQHUVKLS

7KRVH ZKR LGHQWLI\ ZLWK WKH LGHRORJLFD OHIW VXSSRUW VWDWH

f A -- 0 < ê f < 2 < Õ c V Õ 0 4 ñ õ - ê E Ñ A 4 < 0 X õ < ñ Õ Õ 0 õ Ë 2 4



)LJXUH 6XSSRUW IRU 6WDWH &RQWURO RI -PSRUWDQW  
-QG XVWULHV \$FURVV WKH \$PHULFDV



f A -- 0 < ê f < 2 < Õ c V Õ 0 4 ñ õ - ê E Ñ A 4 < 0 X õ < ñ Õ Õ 0 õ Ê 2 4

⟨ ñ õ 4 õ 4 Ê Õ Ê 2 A 4 Õ < ñ 4 Õ V ñ õ U Õ õ Ê õ < õ Õ 4 ñ 2 U Õ Õ 2 4 X 2 Ê Ê Õ 4 4 <  
ê - Õ 2 0 Õ < 4 ž V ñ õ Õ - Õ - Õ V ñ õ U Õ õ 0 A 0 2 2 0 Õ 2 4 2 X 0 Õ X 0  
< ñ Õ ë U Õ 0 Õ < < - 0 U õ Ñ Õ Ê 4 £ E Ñ < ñ 2 U Õ 2 4 < 0 ë Õ W - Õ Ê < 2  
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Ê < 0 U 2 0 õ 2 Ê Õ 4 Ê Õ Ê 2 A 4 Õ Ñ õ ê ê Õ 0 Õ < 2 ë Õ Ê ñ 0 < 4 ñ 2 U Õ Õ W - Õ 0 õ 0

f A -- 0 < ê f < 2 < Õ c V Õ 0 4 ñ õ - ê E Ñ A 4 < 0 X õ < ñ Õ Õ 0 õ Ë 2 4

⟨ ñ Õ 0 Õ 4 A < 4 4 A -- 0 < < ñ Õ - 0 Õ Ñ õ Ë < õ < ñ 2 < < ñ 4 Õ V õ < ñ ñ õ ì ñ Õ 0 Õ Ë 2 < õ 2 0 Õ Õ 4 4 õ Õ X < 4 A -- 0 < 4 < 2 < Õ V Õ 0 4 ñ õ - ê õ - 0 < 2 < õ Ñ < ñ 2 õ Ñ õ U õ Ñ A 2 4 V õ < ñ ê 0 2 Õ Ñ A Ë 2 < õ £ 2 W õ 2 Ë ñ 2 ë Õ õ Õ < õ õ 4 2 4 4 Ë õ 2 < Õ Ñ V õ < ñ 2 † - Õ 0 Ë Õ < 2 ë Õ - õ < Ñ Õ Ë 0 Õ 2 4 Õ õ < ñ Õ - 2 õ Ñ õ U õ Ñ A 2 V õ 4 A -- 0 < 4 < 2 < Õ V Õ 0 4 ñ õ - £ ⟨ ñ Õ V Õ 2 < ñ õ Õ 4 < õ Ñ Õ € - Õ 0 Ë Õ < 2 ë Õ - õ < 4 Õ 4 4 õ Õ X < 4 A -- 0 < 4 < 2 < Õ V Õ 0 4 ñ õ - õ õ





f A -- 0 < ê f < 2 < Õ c V Õ 0 4 ñ õ - ê E Ñ A 4 < 0 X õ < ñ Õ Õ 0 õ Ë 2 4

4 A -- 0 < 4 < 2 < Õ õ < Õ 0 U Õ < ð † ã õ 4 õ Ñ A 4 Ë 2 < X Õ 4 < ñ 2 < õ Ñ õ U õ Ñ A 2 4  
V ñ 4 Õ Õ Ë ñ 2 ë Õ 4 õ < ñ Õ Õ Ë X ž Õ õ < ñ Õ 0 - 4 õ < õ U Õ 0 Õ ë 2 < õ U Õ ž -  
V Õ 0 4 ñ õ - ê õ - 0 < 2 < õ Ñ A 4 < 0 õ Õ 4 ž V ñ õ Õ < ñ 4 Õ V ñ 4 Õ Õ < ñ Õ Õ Ë

$f A -- 0 < \hat{e} f <^2 < \tilde{O} c V \tilde{O} 0 4 \tilde{n} \tilde{o} - \hat{e} E \tilde{N} A 4 < 0 X \tilde{o} < \tilde{n} \tilde{O} \tilde{O} 0 \tilde{o} \tilde{E}^2 4$

$\langle \tilde{n} \tilde{O} \tilde{o} 4 \tilde{n} V \tilde{n} \tilde{O} 0 \tilde{O} \tilde{E} \tilde{O} < V \tilde{O} \tilde{O} 4 A -- 0 < \hat{e} 0 < \tilde{n} \tilde{O} - \tilde{o} < \tilde{o} \tilde{E}^2 4 X 4 < \tilde{O}^2$   
 $- 0 < \hat{e} 0 4 <^2 < \tilde{O} V \tilde{O} 0 4 \tilde{n} \tilde{o} - \hat{e} \tilde{o} \tilde{N} A 4 < 0 X \tilde{N} \tilde{O} 4 < \tilde{O} \tilde{E} \tilde{O} 4 4^2 0 \tilde{o} X \tilde{o} \tilde{N} \tilde{o}$   
 $\tilde{O} 0 \tilde{o} \tilde{E}^2 4 \tilde{V} \tilde{o} \tilde{N} \tilde{O} 4 - 0 \tilde{O}^2 \tilde{N} - 0 \tilde{O} \hat{e} \tilde{O} 0 \tilde{O} \tilde{E} \tilde{O} \hat{e} 0 \tilde{o} < \tilde{O} 0 U \tilde{O} < \tilde{o} \tilde{o} 4 < \tilde{O} \tilde{E}$   
 $\bullet^2 < \tilde{n} \tilde{O} 0 \tilde{z} < \tilde{n} \tilde{o} 4 4 A \hat{e} \tilde{e} \tilde{O} 4 < 4 < \tilde{n}^2 < \tilde{o} \tilde{N} \tilde{o} U \tilde{o} \tilde{N} A^2 4 V \tilde{n} 4 A -- 0 < < \tilde{n} \tilde{O} \tilde{o} 0 \hat{e} U$   
 $0 \tilde{O} \tilde{o} \tilde{O} X <^2 \tilde{E} \tilde{E} \tilde{O} - <^2 2 \tilde{o} \hat{e} \tilde{O} 0 0 \tilde{O} \hat{e} 0 < \tilde{n} \tilde{O} 4 <^2 < \tilde{O} \tilde{o} < \tilde{n} \tilde{O} \tilde{O} \tilde{E}$   
 $\tilde{o} \tilde{N} \tilde{o} U \tilde{o} \tilde{N} A^2 4 V \tilde{n} \tilde{N} < 4 A -- 0 < < \tilde{n} \tilde{O} \tilde{o} 0 \hat{e} U \tilde{O} 0 \tilde{O} < V \tilde{o} \hat{e}^2 U 0 \tilde{O} \tilde{E}$   
 $\tilde{N} \tilde{O} 4 < \tilde{n}^2 < \tilde{o} \tilde{o} < \hat{e} U \tilde{O} 0 \tilde{O} < \tilde{o} U U \tilde{O} \tilde{O} < \mathcal{E}$

## 1 R W H V

~~$\sim \mathcal{E} \bullet A \tilde{O} 4 \tilde{E} \tilde{n} \tilde{O} \tilde{O} X \tilde{O} 0 \tilde{z} f < \tilde{O} - \tilde{n} \tilde{O} 4 \tilde{z} \tilde{n} \tilde{O} f < \tilde{O} - \tilde{n} \tilde{O} 4^\circ$~~

$\bullet \mathcal{E} f \tilde{O} \tilde{O} \tilde{z} \tilde{O} \mathcal{E} \hat{e} \mathcal{E} \tilde{z} \tilde{O} \tilde{E} \tilde{n}^2 0 <^\circ$

$\in \mathcal{E} | A \tilde{N} \tilde{N} \tilde{o} \hat{e} <^2 \tilde{N} \bullet \tilde{O} \tilde{E} \tilde{O}^\circ$

$\bullet \mathcal{E} \setminus \tilde{O} 0 \tilde{O} \tilde{N} \tilde{o} \tilde{z} \tilde{n}^\circ 0 0^\circ \} \tilde{O} \tilde{E}$

$, \mathcal{E} \tilde{E} \tilde{E} 0 \tilde{N} \tilde{o} \hat{e} < \bullet \tilde{o} < \tilde{O} \tilde{N} ]^2 < \tilde{o} 4 \& \tilde{E} \tilde{o} \tilde{E} \tilde{o} 4 4 \tilde{o} \hat{e} 0 V^2 < \tilde{o} \tilde{O} 0 \tilde{o} \tilde{E}^2 2 \tilde{N} < \tilde{n} \tilde{O} 2 \tilde{o} \tilde{o} \tilde{E} \tilde{E}$



f A -- 0 < ê f < 2 < Õ c V Õ 0 4 ñ õ - ê E Ñ A 4 < 0 X õ < ñ Õ Õ 0 õ Ë 2 4

- } Ë ñ Õ 4 X 4 < Õ 4 A -- 0 < õ Ñ Õ W Ë Ë X Ñ Õ 4 Õ W < Õ < Ñ X A < ñ õ < ñ Õ Ë A 0 < 4 õ  
° Ë A < 0 X ± ä A 2 0 2 < Õ Õ 2 Ë 2 0 4 ñ õ Õ W < Õ < Ñ X A 0 Õ 4 - Õ Ë < < ñ Õ - õ < õ Ë 2 õ 4 < õ < A  
< õ 4 ê ° Ë A < Õ Õ ñ 2 < Õ W < Õ < Ñ X A < ñ õ < ñ 2 < Ë õ < õ Õ 4 ; Ë 2 4 õ Ë 0 õ Ë ñ < 4 2 0

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## 5HIHUFHV

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j 3 B / h 2 K 4 3 3 k B / A M / B + / Q ` 4 j B k d B / B Q K 4 B

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c - õ õ | 0 õ U 2 < õ \_ 2 < õ 2 Ñ f < 2 < Õ E & Õ 2 U Õ ¥ < 6 ÷ 2 õ 4 £ ½  
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õ 4 õ < ñ Õ & A 0 - Õ 2 • õ 2 Ñ E < 4 f Ë õ 2 : A Ñ 2 < õ 4 • 2 X 4 õ  
ê & Ë õ Ë < < õ < A Ñ Õ 4 Õ < V Õ Õ • Æ W C Ñ : 2 } } Ë £ ½ 6 Õ " Õ  
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E ë Õ ñ 2 0 < ž • 2 Ñ £ • } } € £ ¼ A V f ñ Ñ õ 4 \ 2 4 4 f A -- 0 < ê 0 " Õ Ë 0 2 Ë X 2  
A V 2 ¥ Õ \ Õ 2 4 A 0 Õ | Ë ž ½ ÷ > ÷ Ë 2 f Ë ÷ Õ Ë 3 ÷ ± ± ÷ > 3 Ë , Æ

Q É ë Õ 0 ž \ 2 Ñ 4 \ Õ õ Õ 0 £ • } } f £ ¼ ¥ ñ 2 < \ 2 Õ 4 | Õ - Õ f A -- 0 < | A Ê õ Ë • Õ 4  
4 õ Ê õ õ < X ê 0 ¥ Õ ê 2 0 Õ | 0 U õ 4 õ • f Õ ê ´ E < Õ 0 Õ 4 < 0 | õ < õ Ë 2  
V ë õ < A Ñ õ 2 -- 0 Ë 2 Ë ñ £ Ë ÷ • † ÷ Ë ± • € • ~ 3 € € ... £

Q 2 Ê 4 Õ ž ‹ 0 ; £ ž 2 Ñ c 2 V õ 4 < ñ 2 A ë £ • } ~ • £ ¼ E 4 4 A Õ c V Õ 0 4 ñ õ - ž • Õ  
Õ < 2 Ñ f A -- 0 < ê 0 ; U Õ 0 Õ < E ¥ Õ 2 U Õ / < õ Z Õ ½ >  
B f Ë ÷ Õ f > Z € ± • € † f 3 • ~ ~ £

\ Õ 0 Õ Ñ õ < ñ ž • Ê X £ • } } † £ ¼ ¥ ñ Õ 0 Õ 2 - õ < 2 õ 4 ¥ ž A < ] < " Õ Ë 0 2 Ë  
: 2 Ê Õ 4 ÷ T b , f f r r r X 7 Q ` # 2 b X + Q K f k y y N f R R f R y f + Q K K m M B b K @ +  
i H B b K @ / 2 K Q + ` + v @ + ? B M @ i B r M @ Q T B M B Q M b @ + Q H m K M  
K 2 ` 2 / B i ? X ? i K H O 9 + d B # d 7 d + + 7

| A Ñ Ñ õ ë < ž 0 Ë ñ ž 2 Ñ ‹ X Õ 0 • | X / C Ë Õ £ 6 ÷ ÷ Ñ £ C > Ë 2 2 > 6 ž ‹ ò Õ

f A -- 0 < ê f < 2 < Õ c V Õ 0 4 ñ õ - ê E Ñ A 4 < 0 X õ < ñ Õ Õ 0 õ Ë 2 4

(OLJDEHWK 1D\ORU JUDGXDWHG IURP 9DQGHUELOW 8QLYHUV  
3ROLWLFDO 6FLHQFH DQG 0HGLFLQH +HDOWK DQG 6RFLHW\ 2  
QRZ ZRUNV DV DJRYHUQPHQW D•DLUV FRQVXOWDQW LQ :DVK  
VWUDWHJLF FRPPXQLFDWLRQV DQG UHJXODWRU\ JXLGDQFH L

7KLV UHSRUW ZDV HGLWHG E\ 'U 0ROOLH - &RKHQ 'U 1RDP/X  
(OLJDEHWK - =HFKPHLVWHU \$XGLWLQJ IRU WKLV UHSRUW ZDV  
WUDQVODWHG E\ 5XE`\$UDQD 'U 'DQLHO 0RQWDOYR DQG 'U -  
WLRQ FRS\HGLWLQJ JUDSKLFV DQG UHSRUW GLVWULEXWLRQ  
(PPD 7DWHP DQG 'U =DFK :DUQHU 2XU GDWD DQG UHSRUWV D  
WKH SURMHFW ZHEVLWH 3OHDVH IROORZ XV RQ 7ZLWWHU RU )

\$V D FKDUWHU PHPEHU RI WKH \$PHULFDQ \$VVRFLDWLRQ IRU 3X  
SDUHQF\ -QLWLDWLYH /\$323 LV FRPPLWWHG WR URXWLQH GLVF  
SURFHVVHV 0RUH LQIRUPDWLRQ DERXW WKH \$PHULFDV%DUR  
YDQGHUELOW HGX ODSRS FRUH VXUYH\V

7KLV QVLWLRQ IRU LV PDGH SRVVLEOH E\ WKH VXSSRUW RI WKH \$PH  
6WDWHV \$JHQF\ IRU -QWHUQDWLRQDO 'HYHORSPHQW 86\$-' D  
RI WKH QVLWLRQ IRU DUH WKH VROH UHVSRQVLELOLW\ RI LWV DXW  
UH5HFW WKH YLHZV RI 86\$-' WKH 8QLWHG 6WDWHV \*RYHUQPHQ  
/\$323 V \$PHULFDV%DURPHWHU VXUYH\V DUH VXSSRUWHG SUH  
8QLYHUVLW\ 7KH URXQG DOVR KDG VXSSRUW IURP WKH  
)RXQGDWLRQV DQG DFDGHPLF SDUWQHUV DQG UHVHDUFKHUV

YDQGHUELOW -HGX C  
#ODSRSBEDURPHW  
#/DWLQ\$PHULFDQ3XEOLF2SLQ  
ODSRS#YDQGHUELOW