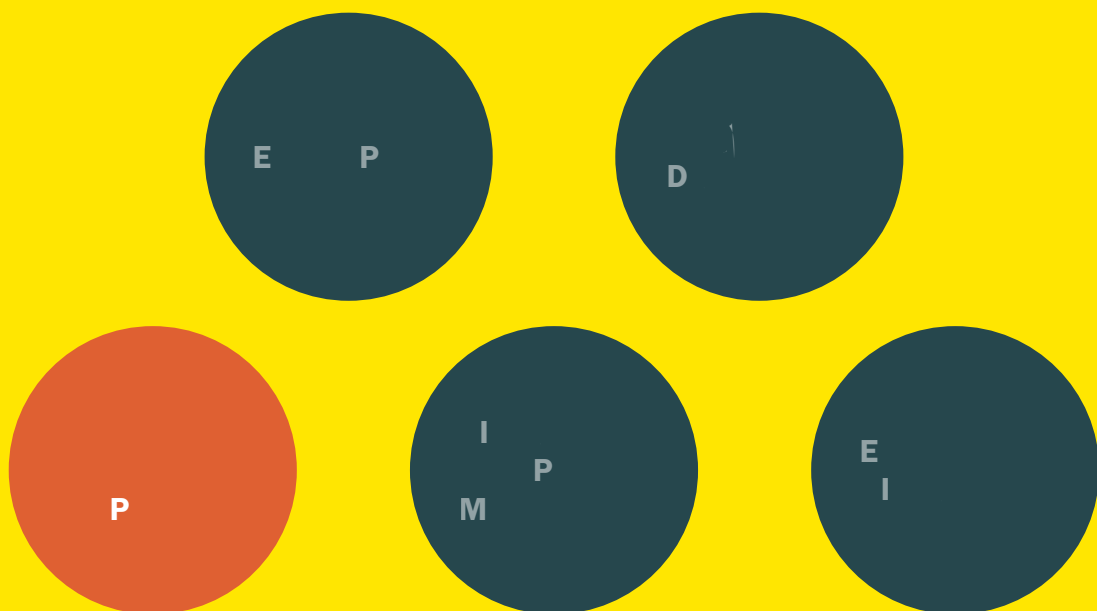


SWPS 2021_01 (January)



The SPRU Working Paper Series aims to accelerate the public availability of the research undertaken by SPRU-associated people, and other research that is of considerable interest within SPRU, providing access to early copies of SPRU research.

E

C

A

Karoline Rogge
Tim Foxon

Ben Martin
Ohid Yaqub

Andrew Stirling
Rob Byrne

Carlos Sato
Josh Siepel

Maria Savona
Alberto Marzucchi

E

Melina Galdos Frisancho

Papers should be submitted to swps@sussex.ac.uk as a PDF or Word file. The first page should include: title, abstract, keywords, and authors' names and affiliations. The paper will be considered for publication by an Associate Editor, who may ask two referees to provide a light review. We aim to send referee reports within three weeks from submission. Authors may be requested to submit a revised version of the paper with a reply to the referees' comments to swps@sussex.ac.uk. The Editors make the final decision on the inclusion of the paper in the series. When submitting, the authors should indicate if the paper has already undergone peer-review (in other series, journals, or books), in which case the Editors may decide to skip the review process. Once the paper is included in the SWPS, the authors maintain the copyright.

UoS: . 1 . 2 / 4 /

IDEAS: . . . / / /

! "#\$%&'()*+,-*\$'(./*0-+1--(*&-/-2&3,*4-52(4*2(4*/6##\$78*9,-*32/-*%:* ;,2)2/*
!*

! "#\$%&'()*+,-*\$'(./*0-+1--(*&-/-2&3,*4-52(4*2(4*/6##\$78*9,-*32/-*%:* ;,2)2/*

<\$6&0

/3\$'4%1+-5/&1*18'.5&\$*5\$***+.15&\$/'#*\$\$.%\$#/'\$+/1&*5#-.&1*''*+.'-./''&*''6&#&/>'MQ\$#.1*@'PECCG;'L5&\$*5\$@'
/\$53*1#1,>'***+&*1:/'&1*41#&5>'3''.'***&941#/'*/1#&\$&*'./\$\$%&*,'/3&.'''#&,*9\$*/'ML531/'N'L/\$&*9-\$##\$%@'
PECRG'6-/'/3\$%\$&.'>\$/'#&/#&\$&:&+\$*5\$/'1',-&+\$/'3\$'4%15\$..;''

O&.'''#&,*9\$*/.'6\$/7\$*\$*%\$.%\$%'53'-.44#>'***+.15&\$/'#*+\$9''*+'''\$'4''%/&5-#''#>'.''#&\$*/'%\$, '%&+&*, '+&.\$'\$. '4%\$:'#\$*/'&* 411%'51-*/%&\$.'MS:'''\$.'\$/' '#;@' PECTI' U\$, %1.?U\$, %1.' \$/' '#;@' PEPEG;' 23&.' &.' /3\$'5'\$. \$'81%' /3\$'
\$\$, #5/\$+ '/'14&5''#'+&.\$'\$. '73&53' "88\$5/' /3\$' 71%#+V.' 411%\$./' 414-#/'&1 MAW<@' PECX'G@' ***+5"-.\$' ***
\$*1%91-.'6-%+\$*'/1'/3\$'3\$''#/'3''*+'\$51*19&5'+\$:\$#149\$*'/18'#17?&*519\$'51-*/%&\$.'MW1/\$)'\$/'#;@'PEEYG;'Z''
/3\$'5'\$. \$'18'/3\$.\$'+&.\$'\$. @'/3\$', #16''#9''%B\$/'\$+9''*+'1\$.'*1/'71%B'4%14\$%#>''. ''*&*5\$*:&:\$/'1'./(\$\$%'4%&:/'\$'
&*:\$./9\$*''M[>#&'N'O5\ "3''*@'PECPG'***+/3\$''5''\$+9''*+'1\$.'*1/'%\$.41*+'4%194#>'6\$5"-.\$/'3\$&&'&*5\$*:&:\$'
.53\$9\$.'''%\$'6&.'\$+/'17''%+.'/14&5.'+\$&&\$*+'&*/\$*''/&1*''#>'MO&##\$%@'PEEYI'A''##'5\$'N'J J81#.@'PECRG; ' '

Z*'/3&.'4"4\$%'7\$&*:\$./&,'/'\$317'.5&\$*'/&8&5'4%1+-5/&1*51*'/&6-/\$./'1'4%1:&+&*, '.1#-/&1*.'/1'03'', ".@'1*\$'18'
/3\$'*\$, #5/\$+ '/'14&5''#'+&.\$'\$. '4''%/&5-#''#>'4%\$.\$*/'&*^''/&*'(9\$%&5';'23\$'4%16\$9'18'03'', ".31#+'.':''%&1-.'
+&9\$%&. &1*.' "4''%/ 8%19' 3\$''#/'3F' \$+-\$/'&1* '***+ '55\$.. /1' &*81%9''/&1* &.' B\$>' 81%' 4%\$:\$*'/&1*I' 6\$/%\$'
&*8%''./%-5/-%\$'-.53''.'%1''+'. ''*+'31.4&/'#.'&.'&941#/'*'/81%'\$''#>'+\$/\$5/&1*''*+'/%\$''/9\$*'/I'***+53''*, \$.'&*'
\$51#1,&5''#'.>./\$9.'+-\$/'1'4%1+-5/&1*''5/&:&/\$\$.'***+5&9''/\$'53''*, '\$3'::\$'91:\$+/'3\$':\$5/1%'73&53/'%''*.9&.'
/3\$'+&.\$'\$. \$'/17''%+.'*\$7''%\$''.;J\$.'%\$53'1*03'', ".&.'91%\$51*5\$*%/'\$+'1*'.19\$'18'/3\$.\$'+&9\$*.'&1*.'/3''*'
1/3\$%\$.@'***+/3&.'51*5\$*%/'&1*':''%&\$.'''5%1..'%\$, &1*.'***+/'&9\$;'A\$''&9'/1''***#>)'\$317'/3&.'+&./%&6-/&1*18'
%\$.'%\$53'/14&5.@'73&53'4%1=&.\$'/'3\$'-.44#>'18'.5&\$*'/&8&5'B*17#+\$, \$@'&.'''#&,*\$+/'1'/3\$'4\$5&\$:\$+ '\$9''*+'81%'
B*17#+\$, '\$1*03'', ".: 'A\$'#11B'/1''*'.7\$%'/3\$'81#17&*, '_-\$./&1*.'F' A3&53''%\$'/3\$'%\$.'%\$53''%\$''.'7&/3&*'
03'', ".73\$%\$'/3\$%\$''%\$', %\$''/\$.'*\$\$\$+.`' A3&53''%\$'/3\$''%\$''.'7&/3'/3\$'3&,3\$./'. -44#>'18'B\*17#+\$, \$`W17'
+1\$.'/3&.'-.44#>:'''%>'551%+&*, '/1'.4'5\$''*+'&9\$`' A3''/41#&5&\$.'9">'&94%1:\$'/3\$''#&,*9\$*'/6\$/7\$*\$'
+\$9''*+'***+.'-44#>`''

A\$''/'/\$94'/1'&+\$*'/&8>'73''/.15&\$/'#*+\$9''*+'.''%\$'91./.'''#&\$*/'&*PECD'6''. \$+'1*&*/\$%:&\$7.'/1'\$=4\$%/. ''*+'
.\$51*+'%>\$:\$&+\$*5\$;'A\$'&*B'/3\$.\$'+\$9''*+'./1'%\$.'%\$53''%\$'.'.8%19''''6&6&19\$/%&5''*''#>.&.'18'4-6&5'/&1*.'
+-\$&*, '/3\$'4\$%&1+'CDDE?PECD'***+'***#>)'\$317'%\$.'%\$53'&*'/3\$'+\$9''*+'\$+''%\$''.'.':''%&\$.'''5%1..'%\$, &1*.'***+
/&9\$;'A\$''#.1'\$:'#-/'/\$/3\$'1#&'18'51##'61''/&:\$%\$.'%\$53'&*'/3&.'.5\$*''&1;<-%'./-+>'##17.'/1'&+\$*'/&8>'73''/
%\$.'%\$53'&.'./&##'9&..&*, '/1'&94%1:\$'.15&\$/'#&'94'5/'*+'73''/41#&5&\$.'9">'51*'/&6-/\$/1''#&,*9\$*'/6\$/7\$*\$'
+\$9''*+'***+.'-44#>'18'%\$.'%\$53'1*03'', ".:'

23\$'4"4\$%'&.'1%, '*&)\$+''.'.81#17.F'.5\$/&1*'P'4%\$.\$*/'.'''#&/%\$''/-%\$'%\$:&\$7'1*'/3\$'%\$#/'&1*18'.5&\$*'/&8&5'
4%1+-5/&1* 7&/3'.15&\$/'#*\$\$\$+.I'.5\$/&1*'a'53''%5/\$&)\$.'/3\$'51*'/=\$/'18''**#>.&.'6>'+\$.5&6&*, '03'', ".
%\$.'%\$53''*+'41#&/&5''#51*'/=\$/'I'.5\$/&1*'T'4%\$.\$*/'.'1-%'9\$/31+1#1,>'81%''..\$..&*, '-.44#>'***+ '\$9''*+'18'
.5&\$*'/&8&5'B*17#+\$, \$&*03'', ".?%\$#/'\$+'4%16#9.I'.5\$/&1*'X'4%\$.\$*/'/3\$'%\$.-#/'.'***+.'5\$/&1*'b\$=/\$*+'./3\$'
+&.5-..&1*1*+'\$9''*+'***+.'-44#>'18'.5&\$*'/&8&5'B*17#+\$, \$''*+'51*5#-+\$.;''

''

EC*F'+-&2+6&-&-?'-1*

23\$'.15&'#&'94&5'/&1*.'18'B*17#+\$, '\$4%1+-5/&1*''*+'&/'.'''#&,*9\$*'/7&/3'.15&\$/'#*\$\$\$+.'''%\$'/14&5.'73&53'
3'::\$', '&*\$+'&*5\$%\$''&*, '%\$#:\$:'*5\$&*'/3\$'##'./'+\$5''\$.'M0&'%&#&'N'J J81#.@'PECDI'\&661*.'@'CDDDI'L'%'\$7&)/'N'
K&\$B\$@'PEEYG;'23\$'51*5\$4/&1*18'.5&\$*5\$'3'.'. \$:1#:\$+/'1'6\$519\$'91%\$51.\$#>'#&*B\$+/'1'.15&\$/'#4%16#9.'
+/3\$', #16''+'15''#53''##\$*, \$.8'5&*, '3-9''*&/>;O1\$%'&941#/'*5\$'3'.'.6\$*\$*, &:\$*'/1'&/'.'44&5'6&#&/>@'
%''/3\$%'/3''*51*.'&+\$&*, '.5&\$*5\$''.'. ''*''5/&:&/>'&*+\$4\$*+\$*'/18'.15&'#4%15\$..\$.'***+'.'. ''''c8\$S\$0#*\$\$.0(1X>1)41(\$\$)1(8'

91%\$'5194%\$3\$*.&:\$'9***\$%&'&*5#-+&*,'.15&''#&'51*19&5&'\$*:&%1*9\$*/'#''*+'41#&/&5''#&'94"5/.;'M\&661*.'
\$/''#;&'CDDXI'L531/'N'L/\$&*9-\$##\$%&'PECRI'L4""4\$*'N':"*'H%11,\$&'PECCG;''

W17\$:\$%&' /3\$' +&./&6- /&1*' 18'.5&\$* /&8&5' 4%1,%\$.. '3''. '6\$*\$' -.-''#>' -\$:\$*' 6\$/7\$*\$' +&88\$%\$* /' "5/1%.' '*+'
.\$5/1%.' '*+'3''. '*1/'*\$5\$..''&#>'9\$/' .15&''#'*\$+\$'. '18'9''%,&*'#&)&+,%1-4.'18'.15&\$ />,' f1%'\$="94#&'\$''+:' '*5\$.'
&*'',' %&5-#/- %\$'3":\$'4%&1%&/&)&+ '4%1+-5/&:&/>' /' /3\$'\$=4\$*.\$'18'#15''#*\$+\$'. 'MH''#>94#&' PEEbI'W\$%+ /&' PECPG'
''*+' /3\$'\$'3''. '6\$*\$'%\$#''/&:\$#>'#&/#&'&*:.\$/9\$* /&'&'%\$.\$"%53'81'+&.\$". /3' /' "88\$5/'411%414-#''/&1*.'MS:"*.'
\$/''#;&'PECTG;''

23-.&' /3\$%\$'. \$\$9. /'1'6\$''', '4'6\$/7\$*\$'%\$.\$"%53'4%&1%&/&.\$.' '*+' .15&''#'+\$9''*+.&' /' /'#\$\$. /'&*.19\$' "%\$'. '18'
B*17#\$+,\$;'L&*5\$'.3&8/.&*' /3\$'51*5\$4/&1*'18'.5&\$*5\$/'\$*+' /1'6\$' /&,3/#>%\$#''/\$+ /'1'53''*, \$.'&*' /3\$'&*. /%-9\$* /&.
&*. /& /- /&1*.' '*+' 4%15\$+-%\$.' 73&53' , -&+\$' .5&\$* /&8&5' "5/&:&/>' M!#\$31' PECCG&' .5&\$*5\$' 41#&5>' 8%''9&*, ' &.'
&941%/'* /' /1'&94%1:\$' /3\$'6''#''*5&*, '18'4%&1%&/&.\$;' L531/' '*+' L/\$&*9-\$##\$%'MPECRG'%\$0\$%' /1' /3\$%\$' +&88\$%\$* /'
41#&5>'8%''9\$.;'23\$'8&%. /'8%''9\$'7''.&*81%9\$+'6> /3\$'&*\$%'%'91+\$#18&*1: ''/&1*&'73&53'.-,, \$./\$+ /3' /' "44#&\$+'
4%&: ''/\$' JNH'71-#+ '81#17'8%19'.5&\$* /&8&5'+&.51:\$%&\$.'

\$/'";MPEPEG'8&*+'''5#''%'9&.9''/53'6\$/7\$\$*/3\$'.15&\$/'"#3\$'"/3*\$\$\$+. 'M'..\$. \$+ '6> '&*+&5''/1%. '1*', #16''# '3\$'"/3'
6-%+\$* '4%1+-5\$+'6>'AW<G''''*+'%\$. '\$'%53'. -44#>'M6". \$+'1*' OSH^ZQS'4-6#&5''/&1* .G;' (#/31- ,3'''/'*''/&1*''#
#\$:\$#'/3\$%'\$. \$\$\$9. /'1'6\$'.19\$'6''#''*5\$'&* '4%&1%&/&\$\$. '@', #16''# '&96''#''*5\$. '4\$%&./'6\$5''- . \$'91./'%\$. '\$'%53'&.' '+1*\$'
&* '3&,3?&*519\$'51-*/%&\$\$. ;'01*8%''%&''''*+' A ''*, 'MPEPEG'8&*+' /3''/. -6?L'3''''* (8&5''*'%\$. '\$'%53'5"4"5&/>@'
''#/'31-,3'6\$&*, '.&, *&8&5''*'/#>' .9''##\$%'73\$*'5194''%\$+'7&/3'1/3\$%'%, &1*.'@'1%, ''*&) \$+'&/. '4%&1%&/&\$\$. ''551%+&*, '
/1'/3\$&%' +&.\$". '\$'6-%+\$* @'\$:\$*'73\$*'51##'61%''/&*, '&*/\$%*' /&1*''##>;'23-. @'. -441%/&*, '#15''#'%\$. '\$'%53'.>./\$9. @'
51-#+ '6\$''''1-/\$'1'%'\$+-5\$', #16''# '3\$'"/3'&*\$_-''#&/>;'

23\$'5". '\$'18'03", ". ' +&.\$". '\$&. '4''%/&5-#''%#>'&*/\$%\$. /&*, '/1'./-+>%\$, ''%+&*, %\$.\$'%53''', \$*+' .''*+'*\$\$. ;'03", ". '
9''&*#>''88\$5/. '9''%, &''#&)\$+'414-#''/&1* . '&*'^''/&* (9\$%&5''@'/3-. '&*5\$*/&:\$. '81%'%\$. '\$'%53'&*/3\$''''\$''''\$'7\$'B';'
W17\$:\$%@'&*'/3\$'4''./'8&:\$'+\$5''+\$\$. @'&/.' '&941%/' '*5\$''5%1.. /3\$'&*/\$%*' /&1*''#'. 5&\$\$/&8&5'5199 -*&/>'3''. ', %17*'
&, *&8&5''*'/#>' Me1%/)' N' 2319". @' PECDG;' 23-. @' ''#/'31-,3' /3&. '4%16#\$9' &.' '9''&*#>'

51*.&+\$%\$+'''*\$,\$5/\$+'/%14&5"#'+&.\$".'\$'6\$5"-.\$&/'3".'%\$5\$&:\$+'#&/#\$''//\$*/&1*'6>/'3\$'&*/\$%*''/&1*''#.5&\$*/&8&5'
''*+'41#&5>'519 9-*&/>81%'9''*>'>\$''%.@'+\$.4&/'\$6\$&*,'''*&941%/'*/'3\$''#/3'6-%+\$*'%*9''*>'#17?'''*+'9&++#?
&*519\$51-*/%&\$.'7&/3*'1'\$88\$5/&:\$'.1#-/&1*;'

23\$'+&.\$".'\$':1#:\$'&*'/'71'43".\$.F/'3\$'''5-/'\$'43".\$'''*+'/'3\$'53%1*&5'43".\$;'23\$'8&%./'./','\$#"./'.'6\$/7\$*\$'1*\$'
''*+'/'71'91*/3.'''*+'&.'-.-''##>'''.>94/19''/&5;'23\$'8&%./'4\$&&1+'18'/3\$'53%1*&5'43".\$'&.'''#.1'''.>94/19''/&5'
''*+'5''*'#"./'.'.:\$%''#>\$''%.;'^"/\$%'&*'/'3\$'53%1*&5'43".\$.@'3\$''%/'8''&#-%\$.'9''>'+\$:\$#14''''*+'@'/1''''#\$..\$%'\$=/\$%/'@'
+&,\$./&:\$'''*+'*\$%:1-.'4%16#\$9.'/'3''/'5"-.\$/'3\$'9''&*1%,''*.'/'1'3':\$'1%,''*&5'8''&#-%\$.;'H\$.4&/'\$/'3\$'.5&\$*/&8&5'
''+:''*5\$.@'\$=&./&*,'+%-,.'Me\$*)*&+"1#\$''''*+'Q&8-%/&91=G''''%\$'91./#>'\$88\$5/&:\$'1*#>'+-%&*, '/3\$'''5-/'\$'43".\$'
18'/3\$'+&.\$".'\$'''*+'/'3\$'8&%./'./','\$'18'/3\$'53%1*&5'43".\$.@'73&#\$'\$88\$5/&:\$*\$\$.'+%14.'51*.&+\$%'6#>'+-%&*, '#"/\$%'
./','\$'18'/3\$'53%1*&5'43".\$.MHQH&@'PECRG;'23-.@'\$%''#>'+&',*1.&.&.\$=/%\$9\$#>&941%/'*/;'(++&/&1*''##>@/'3\$%\$'
''%\$*1':"55&*\$. /'14%\$:\$*/'03", ".;'

./&##&941%/''*'9''/\$%.@'.15&''#*\$\$. '&*03", ".',1'6\$>1*+' /3\$9''*+'&*5#-+'\$&..-\$.%\$#''/\$+' /1'+&.5%&9&*''/ &1* @'
"55\$..'/1'&*8%". /%-5/-%\$@'#''*+'-.\$''*+'41#&5>'''%/&5-#''/ &1*''

Z*'PEEX'/3\$'A1%#+'W\$''#/'3'<%, '*&."/ &1*'MAW<G'%\$51, *&) \$+'03", ". ''.'''*\$, #5/\$+' /%14&5''#'+&.\$". \$'MAW<@'
PEPE"G;'Z*'PECX'&'7''. '&*5#-+'\$+'&*'/3\$'PEaE'L-./''&*''6#'\$H\$: \$#149\$*'/ (, \$*+'''@'.&*5\$'&*''/%, \$/'a;a'18'/3\$'
L-./''&*''6#'\$H\$: \$#149\$*'/ \ 1''#. %\$8\$\$. '/1'/3\$'\$, #5/\$+' /%14&5''#'+&.\$". \$. '73&53'/3\$, #16''# '51999 -*&/>#11B.'
/1'\$%'+'&5''/\$'Mk *&/\$+'Q''/ &1*.'@'PECXG; 'f&*''##>@'&*''PECb'03", ". '7''. '&*5#-+'\$+'&*'/3\$'18'#&./'+&.\$". \$. '4%&1%&/&) \$+'
6>'/3\$'K''* (9\$%&5''*W\$''#/'3'<%, '*&)' /&1*V.'MK (W<G'4#''*S2OZ?K#-.'73&53'4%191/\$. '/3\$'\$&9&*''/ &1*'18'
91/3\$%?/1?53&#+' /%''*. 9&..&1*'18'5\$%/'&*'+&.\$". \$. ;;"

GCE'I3'-(+':3*2(4*#%\$+'32\$*3%(+-'+*%:*; ,2)2/*'

23\$'3&./1%>'18'03", ". ''.'%\$. \$''%53'4%16#\$9'3". '6\$\$*'9''%B\$+'6>'+&88\$%\$*'/4\$%&1+.'&*''73&53'/3\$'+&.\$". '\$'3". '
6\$\$*'+'&88\$%\$*'/#>'8%''9\$+;'23&.'3". '#\$+' /1'/3\$'4%&1%&/&)' /&1*'18': ''%&1-.'+'&.5&4#&*''%'>'8&\$#+. @'.1#- /&1*.'''*+'4-6#&5'
41#&5&\$. ''%1-*+'03", ". 'M[%\$9\$%'N' i "6''#''@'PEEbI' i "6''#''@'PECEG''

('8&./'4\$%&1+'&*''03", ". '%\$. \$''%53'. /''%/\$+'CDER@'7&/3'/3\$'&+\$*'/&8&5''/ &1*'18'/3\$'5"- ."/&:\$'', \$*'/M/3\$'4''%". &/\$G@'

&*'/ \$%9.'18'4-6#&5"/&1*.@'''*+'&.5&4#&*''%>'+&:\$%.&/>'M&;\$;'7\$'''&9\$+/'1'&*5#-+\$'4%1h\$5/. '6\$#1*,&*, '/1''': ''%&\$/>'18'+&.5&4#&*\$.G;'23\$&&'4\$%.4\$5/&:\$'7". '\$..\$*/&''#/1'5'4/-%\$'/3\$':&\$7'18'4\$14#\$'7&/3'\$=4\$%&\$*5\$'5''%>&*, '1-/'%\$. \$''%53'&*'/3&. '8&\$#+ '1*'73''/'3\$'4%&1%&/&\$\$. '&*03"', ". ''%\$*17"+ ">.:;"

H-%&*, '/3\$'&*/\$%:&\$7.@'%\$.41*+\$*/. '9\$*/&1*\$+'73''/'3\$>/31-, 3/'/1'6\$'/3\$'%\$. ''%53''''\$". '73&53'*\$\$+/'1'6\$'\$943".&)\$+'&*1%+\$%' /1'8&*+' .1#- /&1*.' /1' 03"', ".:;' 23\$>' 7\$%' '#'1' ".B\$+' 1*'/3\$' 41#&5&\$\$. '/3\$>' 6\$#&\$:\$'*\$5\$\$. ''%>@'''*+'/3\$'9 ''&*16./''5#\$. '&*'%\$. ''%53''''*+'&94#9\$*''/'&1*'M73&53''''\$''''#.1''''*&+&5"/1%'18'/3\$'*\$\$+.'&*'/3\$'8&\$#+G;''

f&*''##>@'/3%1-, 31-/'PECD''*+'\$''%#>'PEPE'7\$''''#>)\$+'.\$51*+'''>' .1-%5\$.'18'&*81%9''/&1*'&*5#-+&*, '%\$41%/. ' '*+' .15&''# '9\$+&'''7\$6'4", \$.'4%1+-5\$+'6>'1%, ''*&)'/'&1*.'18'4\$14#\$'. -88\$%&*, '8%19'03"', ". 'M4\$14#\$'&*8\$5/\$+'1%#&:&*, '&''''\$". '7&/3'3&, 3'&*8\$5/&1*'%'/'\$.G'. -53''.' /3\$'Z*'/ \$%''/'&1*' '#' f\$+\$\$''/'&1*.'18' (.15&''/'&1*.'18'4\$14#\$' "88\$5/\$+'6>'03"', ". 'MfZQHS0W (\ (LG''*+''''+15-9\$*''''>'4%1+-5\$+'6>''''03"', ". '\$+-5''/'&1*' '#'4%1h\$5/' '&*51##'61%''/'&1*'7&/3%--%''''..15&''/'&1*.'&*'(%, \$*/&''''ML''*9''%&1@'PECXG;'23\$&&':&\$7'7". '\$=%\$9\$#>'&941%''*'/1'-*+\$%\$./''*+'/3\$'*\$\$+.'18'/3\$'4\$14#\$'+&%\$5/#>' .-88\$%&*, '/3\$'51*.\$_-\$*5\$.'18'/3\$'+&.\$". '\$'

JCB*L62(+'+2+'?-*5-+, %4%\$%)78*5 -2/6&' ()*/6##\$7%.*; ,2)2/*&-/-2&3, *

. %2%&0#():+0&&

23\$'9''&*+'/' '''.1-%5\$'-.\$+'81%'1-%'_-''*/&''/&:\$''''#>.&.'51*.&./.'18''''+'/'6". '\$51*''/&*&*, '&*81%9''/&1*'1*'4-6#&5''/&1*.' 'M2&/#\$@'(6./%'5/@' [\$>71%+.@' (-/31%.@' (88&#&''/&1*.'G''*+'/3\$&%5&''/'&1*.'8%19'/3\$'A\$6'18'L5&\$*5\$' MA1LG'6&6#&1, %''43&5+'/'6". '\$4%1+-5\$+'6>'2319.1*'J\$-/\$. 'MD+\$&#-&1:/+, :+@'PECDG;' \&:\$*'/3''/'0.0267.00K.04618431

<-%'9"&*""*""#>.&.'51*.&./.'18'&+\$/&8>&*, '+&88\$%\$*'/14&5.'7&/3&*'03", ". '%\$. \$"%53'""*+'./-+>&*, '317'/3\$>' :"%>""5%1..'%\$, &1*.'""*+'&9\$'4\$%&1+.;'

A\$'-. \$'/3\$'9\$/31+'18'/14&5'91+\$##&*, '/1'+&.51:\$%'51991*2#5/:0'"5%1..'"'51##\$5/&1*'18'+15-9\$*./; '7*'4"/&5-#"%'7\$'-. \$' ^"/\$*/' H&53#\$/ ' "#15"/&1*'M^H(G'81%'8&/&*, '/3\$'/14&5'91+\$#; '23&.'9\$/31+1#1,>'51*.&+\$%.'\$ "53'+15-9\$*/'".'""'+&./%&6-/&1*'18'/14&5. @'""*+'\$ "53'/14&5'".'""'+&./%&6-/&1*'18'71%+.; '23&.' "#17.'+15-9\$*./1%"\$#"/\$'/1'\$. \$:"\$#"/14&5.'7&/3'+&88\$%\$*'/#\$: \$#. '18'&*/\$*.&/>'@%" "/3\$%/3""*6\$&*, '. \$4"""/\$+'&*/1'+&.5%\$/\$', %1-4.; 'M0"..&\$/'"; @'PECYI'J16&*.1*'N'L&#, \$@'PECYG; 'S"53'/14&5'&*'^H('&.'""'9-#/&*19&""'+&./%&6-/&1*'1:\$%'/3\$/\$%9.'&*/3\$:15"6-#"%">'18'/3\$'51%4-.; 'A\$'%8\$%'/1/3\$'4%16"6&#&/>'18'/\$%9', '6\$&*, '\$*\$%"/\$+'6>'/14&5'6'"".'! "\$\$_{mn}; 'H15-9\$*./.'""\$%\$#"/\$+'1/14&5.'6>'\$. /&9"/&*, '/3\$'4%141%/&1*'18'71%+.'8%19"\$ "53""6./%"5"/3"/""\$%, \$*\$%"/\$+'8%19"\$ "53'/14&5; 'A\$'%8\$%'/1%"\$&&\$_{im}"".'/3\$'4%16"6&#&/>'18'+15-9\$*'/&6\$#1*, &*, '/1/14&5'6;''

A\$' "44#>' /14&5'91+\$##&*, '/1'1-%'-.6?."94\$

'A\$'-. '\$''*''\$/%&5'''44%1''53'/1'
, %\$''/\$%' + \$ /3\$*4%15\$\$+ '/

' () * + *i* , (- , . *i*
f1 -6#&5''/&1*'/&18'>\$''%2; \$%'%*i* /&.' /3\$'. - 9'18'%\$& &\$*im* '\$\$#''/&*, '4-6# /&1*'/ /1'/14&5.'&*'\ %1-4', ;'
+ *i* /&.' ''': \$5/1%'18': ''&"6# \$ "3''%"5/\$%)&*, '4-6#&5''/&1*'/&M.4\$5&8&\$+'6\$#17G@'' - ''%\$'/&9\$'8&=\$+'\$88\$5/. '1*'/3\$'
>\$''%18'4-6#&5''/&1*@''''*+' . *i* /&.' ''''*'+19'\$%%1⁸;

23\$'\$=4#''*''/1%>': ''&"6#\$.'&*1-%'%\$, %\$.&1*.' ''%SF'

? M,2+)N/,02/2(2/#,&: #''''%\$#)%2/#,@'0194-/\$+'''.'*-96\$%'18'&*./&/-/&1*.'&*:1#: \$+'&*'/3\$'4-6#&5''/&1*

? M,2+)

%11/\$+'&*#"5B'18%#\$:"/'B*17#\$+,\$'&*/3\$'4-6#&5'41#&5>'""\$*"'6-/'"#.1'1*41#&/&5"#'8%&5/&1*.'73&53'""\$*'1/'
\$=4#"&*\$+'6>'B*17#\$+,\$'.31%/'\$,.\$,;

U\$/@/'&/'7".'9\$*/&1*\$+'&*9-#/#4#\$&*/\$%:&\$7.'8%19'&*+&:&+-"#.'7&/3':""&1-.'6"5B,%1-*+.@'/3'/'%\$. \$"%53'1*'
03", ". '*\$\$. ' /1'8-%/3\$%'&*5#-+\$' /3\$'.15&""'4\$%.4\$5/&:\$'18' /3\$'4%16#\$9@'\$.4\$5&""##>'&*'/3\$'41#&5>'""\$*";'
J\$. \$"%53'1*""##/3\$'1/3\$%'15&1\$51*19&5'53'""'5/\$%&./&5.'. -53' ". '9' "%, &""#&)" /&1*@'+&.5%&9&*"/&1*@""*+'.15&'#'
:-#*\$%"6&#&/>'7\$%\$'9\$*/&1*\$+' ". '5\$* /""#'/1/3\$'8&,3/"" , "&*./ /3&. '4%16#\$9;'K-/' :\$%>'5# \$"%#>'6>'""* &941%/"* /'
9\$96\$%'18'""4-6#&5'1%, ""&)" /&1*71%B&*, '1*03", ".F'

G4; +&*%3& T+&02%)2&0+/, =&7; %=%0&%0&%0#:/%"&5)#\$"+6B& T+& T/""&\$+&%\$"+&2#&02%)2&)+*(:/, =&7; %=%0&/, &#()&
: # (, 2)3H I&MK1#&5>'9"BS\$G'

A&/3&*'/3&.'.15&""# '4\$%.4\$5/&:\$@'.19\$'B\$>'&...-\$.'7\$%\$'%"&.\$+' .-53' ". '/3\$'*\$\$\$+'81%'%\$. \$"%53'1*317' /1'
&94#9\$* /'41#&5&\$. '\$%#"/\$+' /1'03", ". '&*'/3\$'91./ '\$88\$5/&:\$'9""**\$%'1%'/3\$'*\$\$\$+'81%'%\$. \$"%53'1*317' /1'6\$./'
"44%1"53'\$+-5' /&1* &*03", ". '&*1%+\$% /1'51:\$% /3\$'&941%/"* /', "4. '&* &*81%9" /&1*""61- /' /3&. '4%16#\$9""51..'
"" , %\$"/'4"" /'18' /3\$'414-#" /&1*;'Z*'/3\$'71%+. '18'""*=\$4\$% /&*'/3\$'8&\$#+ '18'03", ". '1*'/3&.'&...-\$F'

U*(: %2/#, &/, &7; %=%0& ; %0&\$++ , &(, *+)+02/6%2+*&R VS&%0&/-&/2&T+)+&, #2&)+%"&)+0+%): ; &R VSH&M, &2; /0&5)#\$"+6%2/:&
R7; %=%0S&*-1(&)+1(4600)(/)-1(6%) -1(2)-1(+)-1(*)-1(&-8(R)-1(V)(H)-2(6%) -1(2)-1(1(2((-1(,)-1(*)-1(+)-1())-1(+)-1(0)

; %6(+&7*%:*
2::'\$'2+'%(*%:*
26+, %&/*

Q(\$7*@&)-(+'(2*

@+*

W17\$:\$%@'/3&.'5#"..&&5"/&1*' &.' :\$%>'6%1''+'''*+'h1-%*"#"6".\$+;'23-.@'7\$'6\$#&\$:\$' &/' &.' -.\$8-#'/1' -.\$' ""
9\$/31+1#1,>'73&53'""#17.'/1'#11B'+\$\$4\$%'&*/1'03", ". '%\$. \$"%53'""*+'&+\$*/&8>'/3\$'+&&8\$%\$*/'/14&5.'7&/3&*'/3\$'
51%4-.;'A&/3'/3&.'""&9'&*'9&*+@'7\$%'\$5-%/1'/14&5'91+\$##&*, '9\$/31+;'

NCECE*9%#*3*5 %4-\$'()*&- /6\$+/*

'Z*'1%+\$%'/1'""*"#>)\$'/3\$'+&&8\$%\$*/'""\$". '7&/3&* '03", ". '%\$. \$"%53@'7\$'+&: &+\$'1-%'51%4-. '&*/1'/7\$#: \$'/14&5.@'"".'
/3&.', &: \$. ""'5#\$""%&+\$""'18'/3\$'+&&8\$%\$*/'8&\$#+. '7&/3&* '03", ". '%\$. \$"%53¹³;"

L%\$+""/, =&2#5/:0&

23\$'81#17&*, '#&*B', &: \$. ""'55\$..'/1'""* '&*/\$""'5/&: \$': &. -"#&)"&1*'18'1-%/14&5'9"4'7&/3'CP'/14&5.F'[AZQL](#);'S"53'
5&%5#\$'&*/3\$'#8/'4""*\$#%'\$4%\$. \$*/.'""'/14&5;'23\$'.&)3\$'53\$'5&%5#\$' &&

$$?01_{cm} \cdot \frac{\frac{2_{i \in C} \% \$ \& \& \$_{im}}{3(4-(56789:\$ \#94; <(-=4(:(46; \#=>(:$$

>/=()+&]@P\$0#" (2+&%, *&)+"%2/9+&05+:/%"/8%2/#,&/,*/:%2#)0&5+)&: # (,2)3

>+, 'Y"

4%\$"+&a@&X+=)+00/#,&)+0("20&-#)&P)=+,2/,%&

&
Z*/3\$'8&\$#+ '18'.4\$5&''#&))''&1*'18'(%,\$*/&*''M\%1-4'C@'U:##&N&`+:2#)G@'61/3'51##"61%"/&1*'''+&*/\$%+&.5&4#&*''%&/>' +1*'1/'..\$\$9'/1'+%&:\$'%\$. \$"%53;'23&.'.317.'/3''/%\$. \$"%53'&*/3&.'''\$''&*' '(%, \$*/&*''&.'8%", 9\$*/\$+'''*+'%\$. \$"%53' ,%1-4.'+1*'1/'3":\$'9-53'&*/\$%"5/&1*@\$&/3\$%'*"/&1*''##>'1'&*/\$%*''/&1*''##>;'
(%, \$*/&*'\$&*..&/-/&1*.'/\$*+'/1'4-6#&.3'1*'7# , =+, &N& . /% =, 'M\%1-4'PG'&* '51##"6]TJETQq0.24"%5

23\$'./-+>'-.\$. '_-''*/&/'/'&:\$'""*+'_-'#&/'/'&:\$'/\$53*&_-\$.'/1'\$=4#1%\$'/3\$' '..15&''/1*'6\$/7\$\$*'+\$9""*+'""*+'
.-44#>'18'.5&\$\$/&8&5%\$. \$"%53'&*'/3\$'5". \$'18'03", ".@''''*\$,\$5/\$+/'/%14&5''#'+&.\$". \$@'7&/3'''815-. '1*' (%, \$*/&*\$'""*'
+\$9""*+;'7*'1%+\$%'/1'""*"#>)\$'/3&.'""#&,*9\$*/@'7\$'51*.&+\$%'61/3',#16""#""*+'#15""#'%\$. \$"%53'. -44#>;'A\$'""..\$. .' /1'73''/'\$=/\$*/' %\$#:\$'"/B*17#\$+,\$'3". '6\$\$*'4%1+-5\$+'71%#+7&+\$'""*+'73\$/3\$%' (%, \$*/&*""3". ' +\$: \$#14\$+' %\$. \$""%53'5"4"6&#&/&\$\$. '/1'4%1+-5\$'-. \$8-#B*17#\$+,\$'1%'/1'""6.1%6@'-. \$'""*+'""+"4/'&/'8%19'/3\$'&*/\$%*''/1*""# %\$. \$""%53'

6\$*\$'51*5\$*/%"/\$+'"/31-,3'61/3'.317'+\$5\$".&*, '/%\$*+.'''51..'/&9\$;23&.'5''&*+&5''/\$'/3''/1*1*\$'3''*+@'
/3\$'5-%%\$*'/B*17#\$+, \$'6". \$'81%/3\$.\$'""\$". '&.' -88&5&\$*'/1'9\$\$/'5-%%\$*'/+\$9''*+.'@''''*+'1*'/3\$'1/3\$%'3''*+@'
/3''/3&.'%\$. \$''53'51*./&/-\$.'''', \$*\$%''#''''*+'6". &5'B*17#\$+, \$'6". \$'*\$\$\$+\$/1'+\$:\$#14'%\$. \$''53'1*'/3\$'1/3\$%'
/14&5.;'23-.@'/3\$, %17/3'18/3\$.\$'""\$". '&*'/3\$'4". /'9">'3":\$''#17\$+'81%/3\$'4%1, %\$.. '18'%\$. \$''53'&*'/3\$'1/3\$%'
/14&5.'/1+">;'

21'51*5#-+\$@'73\$*''''*''#>)&*, '.5&\$*5\$'41#&5&\$\$. '&*'%\$#''/&1*'/1'.15&\$/'#'*\$\$+.'@'7\$'. \$\$'/3''/9 -#/#4#\$'4''/3.'\$=&./'
/1'#&*B'. -44#>''''*+'\$9''*+'8''5/1%.;' A3&#\$'&*'.19\$'5". \$.81./\$%&*', #15''#B*17#\$+, \$'&.'6\$*\$8&5&''#&'&*1/3\$%.'
4%191/&*, '51##'61%''/&1*7&/3'&*/\$*''/&1*''#&*'.&/-\$.'.\$9\$./3\$'4\$8\$%\$+'14/&1*;'W17\$:\$%&'&*''''#5". \$. /3\$%\$'
&.'''*\$+\$+/1'71%B'5#1.\$#>'7&/3/3\$'+&:\$%&.&/>'18"/"B\$31#+\$%\$. '&*:1#:\$+'&*'/3&*B&*, ''*+'+\$:\$#14&*, '.1#-/&1*.'
81%'03"', '.9 -#/#&+&9\$*. &1*''#4%16#\$9 .;23&.'7&##''#17'/1'&+\$/&8>/3\$'%\$. \$''53'4&1%&/&\$. '91%\$'88\$5/&:\$#>'
''*+' /1' -*+\$%./''*+' 317'. \$:\$%''# '03"', '.?%\$#''/\$+'&..-\$.'&*/\$%'5'/1' '53&\$:\$' ''* '&*/\$, %''#'' , \$*+''' /17''%+'.
.-/'&*''6#\$'+\$:\$#149\$*;/<4\$*&*, '-4'/3\$'41#&5>'' , \$*+''' /1'6&*, '81%7''%+' /3\$': '#-\$.' ''*+' B*17#\$+, \$'18'
9 -#/#4#\$'./"B\$31#+\$%\$. ''*+'\$*, ", \$'/3\$9'&*'+\$.&, *&*, '.1#-/&1*.'9">''#.'1'51*/%&6-/\$'/1'+\$:\$#14'91%\$'&*/\$, %''#'
.1#-/&1*'/1'03"', ".;@'73&53'7". /3\$'3&, 3\$./'4%&1%&/>'7\$'&+\$*/&8&\$+;'

,

<'0\$'%)&2#,7*

e1%/)@'\ ;@'N'2319".@'W;'MPECDG;'K''".&/\$.@'6-., ''*+'6''*B.F'K%16#\$9.'''*+'51*./%''&*/. '18'+\$.&, *&*, '
41#&5&\$\$. ''*+'/\$53*1#1, &\$. /3''/'/%''.81%9'JNH'&*'/1'3\$''#/35''%\$.1#-/&1*'.F'/3\$'5". \$'18'03"', ". '
+&.\$'. \$'&*'(, \$*/&*''MPEEYmPECYG;'M, , #9%2/#, &% , *& . +9+"#56+, 2@'YMPG@'PPXmPTa;'
3/4.Fgg+1&1%, gCE;CEREgPCXYDaEn;PECD;CXbYDET'
e-.3@'! ;'MCDTX"G;'1:/+, .: +B&2; +&+ , *''+00&-)#, 2/+))

HQH&;'MPECRG;' *dPh*MO!&4XUP4*dUO4*1P>UX&PO. & *dWXU*&U>>U74M`U&>WX&AUWALU&LM`MO!&D4*b*&
7*bP!P1*&. *M1UP1U*;'H%-,. '81%'Q\$,#\$5/\$+'H&.\$".\$. 'Z*&/&"/&:\$.;

^ - * + : ' ' ## @ e ; ? v ; ' MPECEG ; ' O % 2 / # , % ' % 1302 + 60 & # - & M , , # 9 % 2 / # , @ 4 # T %) * 0 & % 4 ; + #) 3 & # - & M , , # 9 % 2 / # , & % , * & M , 2 +) % : 2 / 9 + & L + %) , / , = ; ' (* / 3 \$ 9 ' K % \$. . ; '
O \$ # & * @ ' \ ; @ ' N ' K \$ % . . 1 * @ ' < ; ' M C D D b G ; ' L / - + > & * , ' % \$. \$ ' % 53 ' 51 # # ' 61 % ' / & 1 * ' - . & * , ' 51 ? ' - / 31 % . 3 & 4 . ; ' 1 : / + , 2 # 6 + 2) / : 0 @ ' J g M a G @ ' a b a m a Y Y ; ' 3 / 4 . F g g + 1 & ; 1 % , g C E ; C E E Y g e f E P C P D b E E '
O & # # \$ % @ ' 0 ; ' (; ' M P E E Y G ; ' H \$ 9 15 % ' / &) ' / & 1 * @ ' & * / \$ % * ' / & 1 * ' # ' B * 1 7 # \$ + , \$ ' & * . / & - / & 1 * . @ ' ' * + ' , # 16 " # ' , 1 : \$ % * ' * 5 \$; ' ! # 9 +) , % , : + @ ' \ [M P G @ ' a P X m a X Y ; ' L 514 - . ; ' 3 / 4 . F g g + 1 & ; 1 % , g C E ; C C C C g h ; C T b R ? E T D C ; P E E Y ; E E a X D ; = '
O 1 * / , 1 9 \$ % > @ ' L ; ' K ; @ ' K ' % & . \$ @ ' O ; ' S ; @ ' H 1 / . 1 * @ ' S ; ' O ; @ ' N ' e ' # \$ B @ ' L ; ' J ; ' M P E C b G ; ' A 3 ' / ' H 1 ' A \$ ' [* 1 7 ' (61 - / ' 03 " , " . ' H & . \$ ' . \$ ' & * ' / 3 \$ ' k * & / \$ + ' L / ' / \$. ` ' 4 ; + & P 6 +) / : % , & e # () , % " & # - & 4) # 5 / : % " & d + * / : / , + & % , * & b 3 = / + , + @ ' Y c M b G @ ' C P P X m C P P Y ; ' 3 / 4 . F g g + 1 & ; 1 % , g C E ; T P b D g " h / 9 3 ; C b ? E P C a '
Q \$ # . 1 * @ ' J ; ' J ; ' M P E C C G ; ' 23 \$ ' 9 11 * ' ' * + ' / 3 \$ ' , 3 \$ / / 1 % \$: & . & / \$ + ; ' 1 : / + , : + & % , * & A (\$ ' / : & A # ' / : 3 @ ' J Z M D G @ ' b R C m b D E ; ' L 514 - . ; '
J 16 & * . 1 * @ ' H ; @ ' N ' L & # , \$ @ ' l ; ' M P E C Y G ; ' 4 + K 2 & d / , / , = & T / 2 ; & X @ & P & 4 / * 3 & P 55) # % : . ; ; ' < V J \$ & # # > ; '
L " # / \$ % @ ' (; ' l ; @ ' N ' O " " % & * @ ' e ; ' J ; ' M P E E C G ; ' 23 \$ ' \$ 51 * 1 9 & 5 ' 6 \$ * \$ 8 & / . ' 18 ' 4 - 6 # & 5 # > ' 8 - * + \$ + ' 6 ' . & 5 % \$. \$ ' % 53 F ' (' 5 % & / & 5 ' # ' % \$: & \$ 7 ; ' X + 0 + %) : ; & A # ' / : 3 @ ' J [M a G @ ' X E D m X a P ; ' L 514 - . ; ' 3 / 4 . F g g + 1 & ; 1 % , g C E ; C E C b g L E E T R ? Y a a a M E E G E E E D C ? a '
L " * 9 " " % / & * 1 ' M 011 % + ; G @ ' O ; ' M P E C X G ; ' b % \$ " % 6 # 0 & * + & 7 ; % = % 0 H & P 5 #) 2 + 0 & 5 %) % & R) + \$ 5 + , 0 %) & " % & 5) # \$ " + 6 j 2 / : % & : # , & (, % & 6 /) % * % & / , 2 + =) % " H & 7 # , 2 + , 20 @ & P 6 / + 9 % B & 7 H B & ' % " 0 % " # \$) + B & P H B & 7 %)) / " " # B & 7 H B & d %) 2 / B & ! H B & d + * # , + B & A H B & d #) * + = " / % B & 7 H B & X + : ; + B & ` H P H B & 1 % , 6 %) 2 / , # B & d H B & 1 : % 88 # " % B & d H 1 H ' 0 < Q Z 0 S 2 ; '
L " * 9 " " % / & * 1 @ ' O ; ' M P E C X G ; ' . # : (6 + , 2 % " % L (: ; % 0 & 7 % 65 + 0 / , % 0 & >) + , 2 + & % " % 7 ; % = % 0 ; ' 3 / 4 . F g g 7 7 7 ; > 1 - / - 6 \$; 51 9 g 7 " / 53 ` : w _ S B e [e Y # Q / O '
L " % \$ 7 & /) @ ' H ; ' M P E C Y G ; ' L " # : " " % " " ' 5 & \$ * 5 & " ; ' X + 9 / 02 % & * + & U : # , # 6 k % & M , 02 / 2 (: / # , % " @ ' ? Y M a Y @ ' a C ; ' 3 / 4 . F g g + 1 & ; 1 % , g C E ; C R b E C g E C P T X D D b ; : C D * a Y ; E a '
L " % \$ 7 & /) @ ' H ; @ ' N ' K & \$ # B \$ @ ' J ; ' (; ' M P E E Y G ; ' 23 \$ ' * \$, # \$ 5 / \$ + ' 3 \$ " / ' 18 ' . 5 & \$ * 5 \$ ' 41 # & 5 > F ' J 51 * 5 & # & * , ' . - 44 # > ' 18 " " * + ' + \$ 9 " " * + ' 81 % ' . 5 & \$ * 5 \$; ' U , 9) # , 6 + , 2 % " % 1 : / + , : + & l & A # ' / : 3 @ ' ? [M C G @ ' X m C b ; ' 3 / 4 . F g g + 1 & ; 1 % , g C E ; C E C b g h ; \$ * : . 5 & ; P E E b ; C E ; E E C '
L 531 / @ ' l ; @ ' N ' L / & * 9 - \$ # \$ % @ ' A ; ' S ; ' M P E C R G ; ' 23 \$ ' \$ 8 % " 9 \$. ' 81 % ' & * * 1 : " / & 1 * ' 41 # & 5 > F ' J N H @ ' . > . \$ 9 . ' 18 ' & * * 1 : " / & 1 * ' " * + ' / % " " . 81 % 9 " / & : \$ ' 53 " * , \$; ' X + 0 + %) : ; & A # ' / : 3 @ ' a i M D G @ ' C X X T m C X b Y ; ' 3 / 4 . F g g + 1 & ; 1 % , g C E ; C E C b g h ; % \$. 41 # ; P E C R ; E R ; E C C '
L & \$: \$ % @ ' 0 ; @ ' N ' L 3 & # \$ > @ ' [; ' M P E C T G ; ' ^ H (: & . F ' (' 9 \$ / 31 + ' 81 % : & . - " # &) & * , " " * + ' & * / \$ % 4 % & * , ' / 14 & 5 . ; ' A) # : + + * / , = 0 & # - & 2 ; + & D #) < 0 ; # 5 & # , & M , 2 +) % : 2 / 9 + & L % , = (% = + & L + %) , / , = B & ` / 0 (% " / 8 % 2 / # , B & % , * & M , 2 +) - % : + 0 @ ' b a m Y E ; ' 3 / 4 . F g g + 1 & ; 1 % , g C E ; a C C X g : C g A C T ? a C C E '
L 9 & / 3 @ ' O ; ' l ; @ ' A \$ & * 6 \$, \$ % @ ' 0 ; @ ' e % - " " @ ' S ; ' O ; @ ' N ' (# # \$. & * " @ ' L ; ' M P E C T G ; ' 23 \$ ' L 5 & \$ * / & 8 & 5 ' Z 94 " 5 / ' 18 ' Q " / & 1 * . F ' 11 - % * " " # K " " 5 \$ 9 \$ * / " " * + ' 0 & / " / & 1 * ' K \$ 81 % 9 " " 5 \$; ' A L # 1 W O U @ ' Y M C E G @ ' \$ C E D C D X ; ' 3 / 4 . F g g + 1 & ; 1 % , g C E ; C a Y C g h 1 - % * " # ; 41 * \$; E C E D C D X '
L 4 " " 4 \$ * @ ' l ; @ ' N ' : " " % H % 11 , \$ @ ' ^ ; ' M P E C C G ; ' Z * / 1 + - 5 & * , ' x 4 % 1 + - 5 / & : \$ ' & * / \$ " 5 / & 1 * . V ' & * ' . 15 & " # ' & 94 " 5 / " " . \$. . 9 \$ * / ; ' X + 0 + %) : ; & U 9 % " (% 2 / # , & N & X U 1 & U ` P L ^ P 4 @ ' \ [@ ' P C C m P C R ; ' 3 / 4 . F g g + 1 & ; 1 % , g C E ; a C X P g E D X R P E P C C n C P D T C a Y C R Y b Y T P '
L / & # & * , @ ' (; ' M P E E R G ; ' c < 4 \$ * & * , ' - 4 d " " * + ' c 5 # 1 . & * , ' + 1 7 * d F ' K 1 7 \$ % @ ' 4 " " / & 5 & 4 " / & 1 * @ ' " " * + ' 4 # - % " # & . 9 ' & * ' / 3 \$. 15 & " # ' 44 % " & . " # 18 ' / 53 * 1 # 1 , > ; ' 1 : / + , : + & 4 + : ; , # # = 3 & % , * & b (6 % , & ` % " (+ 0 @ ' J] M P G @ ' P b P m P D T ; ' L 514 - . ; ' 3 / 4 . F g g + 1 & ; 1 % , g C E ; C C Y Y g E C b P P T a D E Y a C C P b X '
k * & / \$ + ' Q " / & 1 * . ; ' M P E C X G ; ' 4) , 0 - #) 6 / , = & # () & T #) " * @ 4 ; + & \ [] [& P = + , * % & - #) & 1 (02 % / , % \$ " + & . + 9 + # 5 6 + , 2 ; ' 3 / 4 . F g g . - / " & * " 6 # \$ + \$: \$ # 14 9 \$ * / ; - * ; 1 % , g 41 . / P E C X g / " " * . 81 % 9 & * , 1 - % 7 1 % # + g 4 - 6 # & 5 " / & 1 * '

! \$#31@'^;MPECCG;'^"'5&\$*5&'">#1.'4'"'+&, 9 ".'+\$'#"41#t/&5"'5&\$*/t&5"@'/\$5*1#s, &5'">'+\$'&**1:"5&s*,'
U02(*/#&1#:/%"&*+&L%&7/+,:/3&L%&4+.:,#"#=k%&. +0*+&P6m)/:%&L%2/, %@"DDmCPX;'

,

@##-(4''*

4%\$"+&P?@1(66%)3&02%2/02/:0&#-&/,*+5+,*+,2&9%)/%\$"+0&

*	S* D(/+'+6+'%(/*	S*;*6(+&'-'/*	;;* D(4-''*	S*D(/+[* @&)-(''(2*	D(+-&4'/3'#\$'(2&'7*	;'+2+'%(/*
K-2(*	P;bX'	C;Tb'	E;RT'	E;PP'	a;T'	CR;P'
K'(*	C'	C'	E;ER'	E'	C'	C'

X'

@T''

4%\$"+&Pa

D

2020.20. Riskwork in the Construction of Heathrow Terminal 2. Rebecca Vine.

2020.19. The Origin of the Sharing Economy Meets the Legacy of Fractional Ownership. Francesco Pasimeni.

N

2020.18. Sustainability and Industrial Change: The Hindering Role of Complexity. Tommaso Ciarli and Karolina Safarzynska.

O

2020.17. Interplay of Policy Experimentation and Institutional Change in Transformative Policy Mixes: The Case of Mobility as a Service in Finland. Paula Kivimaa and Karoline S. Rogge.

2020.16. Fostering Innovation Activities with the Support of a Development Bank: Evidence from Brazil. Marco Carreras.

2020.15. Tailoring Leadership to the Phase-Specific Needs of Large Scale Research Infrastructures. David Eggleton.

Valeria Arza and Agustina Colonna (2021). Exploring the Links between Research Demand and Supply: The Case of Chagas. SPRU Working Paper Series (SWPS), 2021-01: 1-31. ISSN 2057-6668. Available at: www.sussex.ac.uk/business-school/spru/research/working-papers

Science Policy Research Unit
University of Sussex, Falmer
Brighton BN1 9SL
United Kingdom

SPRU website: www.sussex.ac.uk/business-school/spru
SWPS website: www.sussex.ac.uk/business-school/spru/research/working-papers
Twitter: @SPRU_Sussex