

注：前期已经进行插值法填补、标准化等数据预处理，由于原始数据没有保存，只保存了数据预处理之后的数据，故此处省略该部分代码和运行结果。提交的 dta 文件也是经过数据预处理之后的。

1. 基准回归

代码：

```
reghdfe Digital_transformationA DID_sc , absorb(code year) vce(r)
est store m1
reghdfe Digital_transformationA DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B
z_Shrhfd10 z_F050504C , absorb(code year) vce(r)
est store m2
reghdfe Digital_transformationA DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B
z_Shrhfd10 z_F050504C , absorb(code year Sicda) vce(r)
est store m3
reghdfe Digital_transformationA DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B
z_Shrhfd10 z_F050504C , absorb(code year Sicda city_reg) vce(r)
est store m4
reg2docx m1 m2 m3 m4 using huigui.docx,replace b(%9.3f) se(%9.3f) scalars(N r2 F)
title(表 1 基准回归表格 1) note(***p<0.01,**p<0.05,*p<0.10)
```

运行结果：

表 1 基准回归表格 1

	(1)	(2)	(3)	(4)
	Digital_transformationA	Digital_transformationA	Digital_transformationA	Digital_transformationA
DID_sc	0.070***	0.074***	0.077***	0.079***
	(0.018)	(0.018)	(0.018)	(0.018)
z_Ynvaltrd_14		0.017**	0.019***	0.021***
		(0.007)	(0.007)	(0.007)
z_Ynshrtrd_14		-0.009	-0.012	-0.012
		(0.008)	(0.008)	(0.008)
z_F040203B		-0.003***	-0.003***	-0.003***
		(0.001)	(0.001)	(0.001)
z_Shrhfd10		-0.073***	-0.076***	-0.070***
		(0.013)	(0.012)	(0.012)
z_F050504C		0.001	0.000	0.000
		(0.002)	(0.003)	(0.003)

_cons	1.493***	1.494***	1.493***	1.492***
	(0.010)	(0.010)	(0.010)	(0.010)
N	32760	32125	32125	32122
R ²	0.815	0.816	0.821	0.822
F	15.766	11.443	12.624	11.901
***p<0.01", **p<0.05", *p<0.10				

2. 缩尾

代码:

***1%缩尾, 按公司分组 (列 1)

preserve

winsor2 Digital_transformationA z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B z_Shrhfd10

z_F050504C, cuts(1 99) gen(*_w1) by(code) // 保存为*_w1 后缀的新变量

reghdfe Digital_transformationA_w1 DID_sc z_Ynvaltrd_14_w1 z_Ynshrtrd_14_w1

z_F040203B_w1 z_Shrhfd10_w1 z_F050504C_w1, absorb(code year Sicda city_reg) vce(r)

est store m6

reg2docx m6 using suowei1.docx, replace b(%9.3f) se(%9.3f) scalars(N r2 F) title(表1 缩尾表格 1) note(***p<0.01, **p<0.05, *p<0.10)

restore

***5%缩尾, 按公司分组 (列 2)

preserve

winsor2 Digital_transformationA z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B z_Shrhfd10

z_F050504C, cuts(5 95) gen(*_w5) by(code) // 保存为*_w5 后缀的新变量

reghdfe Digital_transformationA_w5 DID_sc z_Ynvaltrd_14_w5 z_Ynshrtrd_14_w5

z_F040203B_w5 z_Shrhfd10_w5 z_F050504C_w5, absorb(code year Sicda city_reg) vce(r)

est store m7

reg2docx m7 using suowei2.docx, replace b(%9.3f) se(%9.3f) scalars(N r2 F) title(表1 缩尾表格 2) note(***p<0.01, **p<0.05, *p<0.10)

restore

运行结果:

表 1 缩尾表格 2

	(1)	(2)
	Digital_transformationA	Digital_transformationA
DID_sc	0.080***	0.080***
	(0.018)	(0.018)
z_Ynvaltrd_14	0.021***	0.021***
	(0.007)	(0.007)
z_Ynshrtrd_14	-0.012	-0.012
	(0.008)	(0.008)
z_F040203B	-0.003***	-0.003***

	(0.001)	(0.001)
z_Shrhfd10	-0.070***	-0.070***
	(0.012)	(0.012)
z_F050504C	0.000	0.000
	(0.003)	(0.003)
_cons	1.491***	1.491***
	(0.010)	(0.010)
N	32119	32119
R2	32119	32119
F	0.822	0.822

3. 平行趋势检验

代码:

```
//去均值
gen event = year - 2016 if Treat_sc==1
tab event, gen(eventt)
forvalues i = 1/12{
    replace eventt`i' = 0 if eventt`i' == .
}
drop eventt1
// 执行回归并保存结果
reghdfe Digital_transformationA eventt2 eventt3 eventt4 eventt5 eventt6 eventt7 eventt8
eventt9 eventt10 eventt11 eventt12 ,a(code year) vce(r)
estimates store myreg
//计算政策实施之前的系数均值
forvalue i=2/4{
    gen b_`i' = _b[eventt`i']
}
gen avg_coef = (b_2+b_3+b_4)/3
su avg_coef ///描述性统计
//画回归系数动态趋势图
coefplot, ///
    keep(eventt*) ///
    coeflabels(eventt2 = "-3" ///
eventt3 = "-2" ///
eventt4 = "-1" ///
eventt5 = "0" ///
eventt6 = "1" ///
eventt7 = "2" ///
eventt8 = "3" ///
eventt9 = "4" ///
```

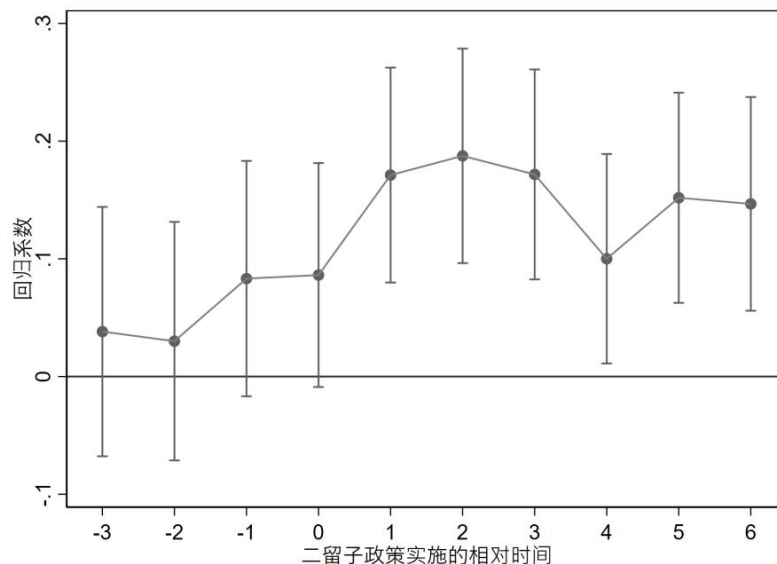
```

eventt10 = "5"          ///
eventt11 = "6"          ///
eventt12 = "7")        ///
vertical              ///
yline(0)              ///
ytitle("回归系数")      ///
xtitle("双创政策实施的相对时间") ///
addplot(line @b @at)    ///
ciopts(recast(rcap))    ///
scheme(s1mono)
graph export "article1_1.png", as(png) replace width(800) height(600)

```

运行结果:

注：此处 xtitle 名称没有修改成"双创政策实施的相对时间"，由于代码运行时间较长，不再重复运行，此处是第一次运行结果



4. 安慰剂检验

代码:

```

clear
use "\\Mac\Home\Desktop\创新.dta"
reghdfe Digital_transformationA DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B
z_Shrhfd10 z_F050504C, a(year code) vce(r)
bys Treat_sc: distinct code
//生成此数据的冲击时间变量
gen aaa=year if DID_sc==1
bys city_reg: egen action=min(aaa)
drop aaa
//生成分组变量

```

```

bys code:egen treat=max(DID_sc)
replace treat=1 if action<3000
**正式开始**
mat b = J(500,1,0)
mat se = J(500,1,0)
mat p = J(500,1,0)
forvalues i=1/500{
    use "\\Mac\Home\Desktop\创新.dta",clear
    xtset code year
    gen aaa=1
    bys code:gen bbb=sum(aaa)
    sample 1 if bbb!=1, count by(code)
    drop if bbb==1
    sample 2297, count
    keep   year code
    rename year policy_year
    save 安慰剂抽取数据, replace
    merge 1:m code using "\\Mac\Home\Desktop\创新.dta"
    xtset code year
    gen treat_aw = (_merge == 3)
    gen period = (year >= policy_year)
    gen did = treat_aw*period
    qui reghdfc Digital_transformationA did z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B
z_Shrhfd10 z_F050504C,a(year code) vce(r)
    mat b[`i', 1] = _b[did]
    mat se[`i', 1] = _se[did]
    mat p[`i', 1] = 2 * ttail(e(df_r), abs(_b[did]/_se[did]))
}
svmat b, names(coef)
svmat se, names(se)
svmat p, names(pvalue)
drop if pvalue1==.
label var pvalue1 p 值
label var coef1 估计系数
keep coef1 se1 pvalue1
twoway ///
    (kdensity coef1, yaxis(2) lcolor(gs8) lwidth(medthin)) /// 灰色核密度线
    (scatter pvalue1 coef1, yaxis(1) msymbol(oh) mcolor(maroon) msize(small)) /// 暗红色空
心点
    ,///
    xlabel(-0.15(0.05)0.15, nogrid format(%4.2f) labsize(small)) ///
    ytitle("p 值", orientation(horizontal) axis(1)) ///
    ytitle("核密度", orientation(horizontal) axis(2)) ///
    ylabel(0(0.2)1, nogrid axis(1) format(%4.1f) angle(0)) ///

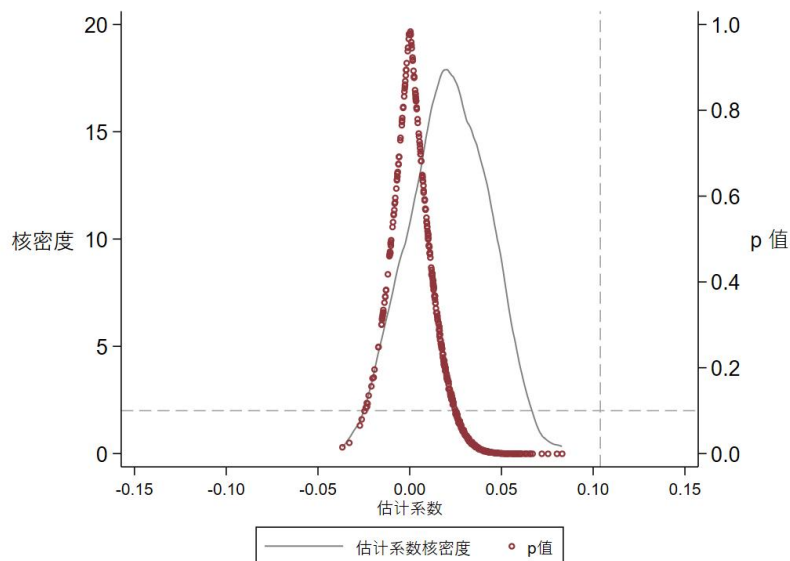
```

```

ylabel(, axis(2) angle(0)) ///
xline(0.1039, lcolor(gs10) lpattern(dash) lwidth(thin)) /// 灰色虚线参考线
yline(0.1, axis(1) lcolor(gs10) lpattern(dash) lwidth(thin)) ///
xtitle("估计系数", size(small)) ///
legend(order(1 "估计系数核密度" 2 "p 值") size(small)) ///
plotregion(style(none)) ///
graphregion(color(white)) ///
scheme(s1mono) ///
saving("安慰剂检验图.gph", replace)

```

运行结果:



5. 稳健性检验（调整地区范围）

代码:

```

*调整地区的代码（排除特定省份和直辖市）
preserve
* 创建一个新的变量 city_flag, 初始值为 1
gen city_flag = 1
* 对特定省份赋值为 0（西部部分省份）
replace city_flag = 0 if inlist(prov_reg, "甘肃省", "青海省", "宁夏回族自治区", "新疆维吾尔自治区", "西藏自治区", "云南省", "贵州省")
* 对直辖市赋值为 0
replace city_flag = 0 if inlist(city_reg, "北京市", "天津市", "上海市", "重庆市")
* 仅保留 city_flag == 1 的样本（即未被排除的地区）
keep if city_flag == 1
* 进行回归分析
reghdfe Digital_transformationA DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B
z_Shrhfd10 z_F050504C, absorb(code year) vce(r)
est store m9

```

* 输出回归结果到 Word 文件
 reg2docx m9 using tiaozheng.docx, replace b(%9.3f) se(%9.3f) scalars(N r2 F) title(表 1 调整
 时间窗口表格 1) note(**p<0.01,**p<0.05,*p<0.10)
 restore

运行结果:

表 1 调整时间窗口表格 1

	(1)
	Digital_transformationA
DID_sc	0.101***
	(0.020)
z_Ynvaltrd_14	0.021***
	(0.008)
z_Ynshrtrd_14	-0.018*
	(0.010)
z_F040203B	-0.003***
	(0.001)
z_Shrhfd10	-0.073***
	(0.015)
z_F050504C	0.000
	(0.002)
_cons	1.433***
	(0.010)
N	24271
R ²	0.803
F	11.745
***p<0.01", ***p<0.05", *p<0.10	

6. 稳健性检验（调整时间窗口）

代码:

*调整时间窗口的代码（仅保留 2016 年及以后的数据）
 preserve
 * 创建时间标记变量
 gen year_2016 = 1
 * 将 year < 2016 的观测值标记为 0
 replace year_2016 = 0 if year < 2016
 * 仅保留 year_2016 == 1 的样本（即 2016 年及以后）
 keep if year_2016 == 1
 * 进行回归分析

```

reghdfe Digital_transformationA DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B
z_Shrhfd10 z_F050504C , absorb(code year) vce(r)
est store m10
* 输出回归结果到 Word 文件
reg2docx m10 using tiaozheng2.docx, replace b(%9.3f) se(%9.3f) scalars(N r2 F) title(表 1 调
整时间窗口表格 2) note(***p<0.01,**p<0.05,*p<0.10)
restore

```

运行结果:

表 1 调整时间窗口表格 2

	(1)
	Digital_transformationA
DID_sc	0.047*
	(0.027)
z_Ynvaltrd_14	0.010
	(0.007)
z_Ynshrtrd_14	-0.041***
	(0.013)
z_F040203B	-0.004**
	(0.002)
z_Shrhfd10	-0.029
	(0.020)
z_F050504C	-0.001
	(0.002)
_cons	1.709***
	(0.020)
N	23598
R ²	0.867
F	3.142

***p<0.01", "**p<0.05", "*p<0.10

7. 排除同期政策

代码:

***排除同期政策

```

reghdfe Digital_transformationA DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B
z_Shrhfd10 z_F050504C , absorb(code year) vce(r)
est store m1
reghdfe Digital_transformationA DID_sc DID_in z_Ynvaltrd_14 z_Ynshrtrd_14
z_F040203B z_Shrhfd10 z_F050504C , absorb(code) vce(r)
est store m2

```


reg2docx m1 m2 using tongqi.docx,replace b(%9.3f) se(%9.3f) scalars(N r2 F) title(表 1 排除同期政策表格 1) note(***p<0.01,**p<0.05,*p<0.10)

运行结果:

表 1 排除同期政策表格 1

	(1)	(2)
	Digital_transformationA	Digital_transformationA
DID_sc	0.074*** (0.018)	0.551*** (0.013)
z_Ynvaltrd_14	0.017** (0.007)	0.057*** (0.009)
z_Ynshrtrd_14	-0.009 (0.008)	0.042*** (0.011)
z_F040203B	-0.003*** (0.001)	-0.003** (0.001)
z_Shrhfd10	-0.073*** (0.013)	-0.200*** (0.014)
z_F050504C	0.001 (0.002)	-0.003* (0.001)
DID_in		0.266*** (0.014)
_cons	1.494*** (0.010)	1.165*** (0.008)
N	32125	32125
R ²	0.816	0.795
F	11.443	698.637
***p<0.01", "**p<0.05", "*p<0.10		

8. 异质性检验

代码:

先进行企业分组，详见上市公司异质性分组.dta，并对数据进行匹配：
merge 1:1 code year using "\\Mac\Home\Desktop\大三下\世界经济文献\最终方案\上市公司异质性分组.dta"
其次重复基准回归过程：
reghdfe Digital_transformationA DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B z_Shrhfd10 z_F050504C if 是否属于东部==1, absorb(code year Sicda city_reg) vce(r)
est store m1
reghdfe Digital_transformationA DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B z_Shrhfd10 z_F050504C if 是否属于中部==1, absorb(code year Sicda city_reg) vce(r)
est store m2

```

reghdfe Digital_transformationA DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B
z_Shrhfd10 z_F050504C if 是否属于西部==1, absorb(code year Sicda city_reg) vce(r)
est store m3
reghdfe Digital_transformationA DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B
z_Shrhfd10 z_F050504C if 技术密集型==1, absorb(code year Sicda city_reg) vce(r)
est store m4
reghdfe Digital_transformationA DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B
z_Shrhfd10 z_F050504C if 资产密集型==1, absorb(code year Sicda city_reg) vce(r)
est store m5
reghdfe Digital_transformationA DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B
z_Shrhfd10 z_F050504C if 劳动密集型==1, absorb(code year Sicda city_reg) vce(r)
est store m6
reg2docx m1 m2 m3 m4 m5 m6 using yizhixing.docx, replace b(%9.3f) se(%9.3f) scalars(N
r2 F) title(表 1 异质性检验表格 1) note(**p<0.01,**p<0.05,*p<0.10)

```

运行结果:

表 1 异质性检验表格 1

	(1)	(2)	(3)	(4)	(5)	(6)
	Digital_tran sformation A	Digital_tran sformation A	Digital_tran sformation A	Digital_tran sformation A	Digital_tran sformation A	Digital_tran sformation A
DID_s c	0.094***	0.077*	0.039	0.127***	0.047	0.024
	(0.022)	(0.041)	(0.047)	(0.027)	(0.037)	(0.031)
z_Ynv altrd_1 4	0.034***	0.018	-0.016	0.019**	-0.010	0.006
	(0.009)	(0.016)	(0.015)	(0.009)	(0.018)	(0.014)
z_Yns hrtrd_1 4	-0.015	-0.036*	0.001	0.003	-0.011	-0.003
	(0.012)	(0.021)	(0.011)	(0.016)	(0.015)	(0.015)
z_F04 0203B	-0.004***	0.695	0.565	-40.662**	-1.243***	-0.004***
	(0.001)	(1.183)	(0.372)	(16.282)	(0.391)	(0.001)
z_Shrh fd10	-0.078***	-0.063**	-0.043	-0.099***	0.015	-0.075***
	(0.016)	(0.026)	(0.028)	(0.024)	(0.022)	(0.021)
z_F05 0504C	0.042**	0.023	-0.004***	-0.002	0.011	0.072***
	(0.018)	(0.025)	(0.001)	(0.001)	(0.015)	(0.024)
_cons	1.592***	1.254***	1.187***	1.489***	0.790***	1.455***
	(0.013)	(0.021)	(0.026)	(0.110)	(0.019)	(0.017)

N	23340	4913	3704	15440	5691	10675
R ²	0.829	0.801	0.790	0.853	0.668	0.795
F	12.675	2.338	2.853	9.091	2.463	5.201
***p<0.01", **p<0.05", *p<0.10						

9. 机制检验

代码:

```

reghdfe Digital_transformationA DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B
z_Shrhfd10 z_F050504C , absorb(code year) vce(r)
est store m1
reghdfe RDSPendSum DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B z_Shrhfd10
z_F050504C , absorb(code year) vce(r)
est store m2
reghdfe Digital_transformationA RDSPendSum DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14
z_F040203B z_Shrhfd10 z_F050504C , absorb(code year) vce(r)
est store m3
reghdfe Patents4 DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B z_Shrhfd10
z_F050504C , absorb(code year) vce(r)
est store m4
reghdfe Digital_transformationA Patents4 DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14
z_F040203B z_Shrhfd10 z_F050504C , absorb(code year) vce(r)
est store m5
reghdfe index_aggregate_city DID_sc z_Ynvaltrd_14 z_Ynshrtrd_14 z_F040203B
z_Shrhfd10 z_F050504C , absorb(code year) vce(r)
est store m6
reghdfe Digital_transformationA index_aggregate_city DID_sc z_Ynvaltrd_14
z_Ynshrtrd_14 z_F040203B z_Shrhfd10 z_F050504C , absorb(code year) vce(r)
est store m7
reg2docx m1 m2 m3 m4 m5 m6 m7 using zhongjie.docx,replace b(%9.3f) se(%9.3f)
scalars(N r2 F) title(表 1 中介表格 1) note(***p<0.01,**p<0.05,*p<0.10)

```

运行结果:

表 1 中介表格 1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Digital_transformationA	RDSPendSum	Digital_transformationA	Patents4	Digital_transformationA	index_aggregate_city	Digital_transformationA
DID_sc	0.074***	6.95e+07** *	0.102***	68.267** *	0.072***	1.511***	0.077***
	(0.018)	(1.65e+07)	(0.019)	(20.333)	(0.027)	(0.165)	(0.018)

z_Ynvaltr d_14	0.017**	1.09e +08** *	0.010	-20.9 52	0.005	0.038	0.014**
	(0.007)	(3.03e +07)	(0.007)	(29.2 69)	(0.010)	(0.055)	(0.007)
z_Ynshrtr d_14	-0.009	-9.07e +06	-0.013	104. 684*	-0.015	-0.073	-0.005
	(0.008)	(3.10e +07)	(0.009)	(57.2 11)	(0.016)	(0.068)	(0.008)
z_F04020 3B	-0.003***	3.80e +06	-0.001	3.26 7	-0.007	-0.000	-0.003***
	(0.001)	(3.34e +06)	(0.008)	(1.99 0)	(0.010)	(0.004)	(0.001)
z_Shrhfd 10	-0.073***	-2.19e +07	-0.070***	-25.8 74	-0.087***	-0.193**	-0.073***
	(0.013)	(1.73e +07)	(0.015)	(28.9 55)	(0.020)	(0.098)	(0.013)
z_F05050 4C	0.001	2.93e +06*	-0.002*	25.9 34	-0.004	-0.053	0.001
	(0.002)	(1.77e +06)	(0.001)	(22.9 64)	(0.024)	(0.038)	(0.002)
RDSpend Sum			0.000***				
			(0.000)				
Patents4					0.000**		
					(0.000)		
index_ag gregate_c ity							0.004***
							(0.001)
_cons	1.494***	2.18e +08** *	1.535***	135. 689* **	1.541***	253.730* **	0.516**
	(0.010)	(1.12e +07)	(0.011)	(12.0 50)	(0.015)	(0.093)	(0.228)
N	32125	28273	28232	1677 1	16686	30467	30428
R ²	0.816	0.732	0.829	0.53 0	0.848	0.996	0.819
F	11.443	6.206	10.288	2.53 2	4.708	15.517	12.855

***p<0.01", **p<0.05", *p<0.10