# Updates:
# Region characteristics of knowledge flows

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## 1 Trial 1 (Basic model): Failed to converge

```
xtnbreg cit_recd_total cit_made_localinternal cit_made_localexternal ///
               cit_made_nonlocalinternal cit_made_nonlocalexternal
                  cit_made_other ///
               lnpatents lnpool d2002-d2012 ///
               if (!missing(mean_patent_rate12) & mean_patent_rate12 >
                  200)
eststo
esttab using ‘reportdir’eflowsregt01.tex, ///
               title("Effect of Geographic Distribution of Citations Made
                  on Citations Received \label{eflowsreg}") ///
               indicate("Year Dummy = d20*") ///
               label longtable replace
// This regressions runs into > 500 iterations. While it does finally
   converge, I chose to kill it without completing

xtnbreg cit_recd_total cit_made_localinternal cit_made_localexternal ///
               cit_made_nonlocalinternal cit_made_nonlocalexternal
                  cit_made_other ///
               lnpatents lnpool d2002-d2012 ///
               if (!missing(mean_patent_rate12) & mean_patent_rate12 >
                  200), i(regionid) fe

eststo
esttab using ‘reportdir’eflowsregt01.tex, ///
               title("Effect of Geographic Distribution of Citations Made
                  on Citations Received \label{eflowsreg}") ///
               indicate("Year Dummy = d20*" "Region Fixed Effects = *
                  region*") ///
               label longtable replace
// The above regression ran several hours and did not converge. The most
   recent time I killed it after 19 iterations
```

# 2 Trial 2 (patents instead of lnpatents): The model with fixed effects failed to converge

```
xtnbreg cit_recd_total cit_made_localinternal cit_made_localexternal ///
              cit_made_nonlocalinternal cit_made_nonlocalexternal
                 cit_made_other ///
              patents lnpool d2002-d2012 ///
              if (!missing(mean_patent_rate12) & mean_patent_rate12 >
                 200)
eststo
esttab using ‘reportdir’eflowsregt02.tex, ///
              title("Effect of Geographic Distribution of Citations Made
                 on Citations Received \label{eflowsreg}") ///
              indicate("Year Dummy = d20*") ///
              label longtable replace

xtnbreg cit_recd_total cit_made_localinternal cit_made_localexternal ///
              cit_made_nonlocalinternal cit_made_nonlocalexternal
                 cit_made_other ///
              lnpatents lnpool d2002-d2012 ///
              if (!missing(mean_patent_rate12) & mean_patent_rate12 >
                 200), i(regionid) fe
// The above regression did not converge after 79 iterations, and was
   killed
eststo
esttab using ‘reportdir’eflowsregt02.tex, ///
              title("Effect of Geographic Distribution of Citations Made
                 on Citations Received \label{eflowsreg}") ///
              indicate("Year Dummy = d20*" "Region Fixed Effects = *
                 region*") ///
              label longtable replace
// The above regression did not converge even after 43 iterations. Killed
    it
```

Table 1: Effect of Geographic Distribution of Citations Made on Citations Received

| | (1) Citations Received |
|---|---|
| Citations Received | |
| Citations Made to [Same Region, Same Assignee] | 0.0000309*** |
| | (5.64) |
| Citations Made to [Same Region, Different Assignee] | 0.00000637* |
| | (2.02) |
| Citations Made to [Different Region, Same Assignee] | 0.000000610 |
| | (0.16) |

| | |
|---|---|
| Citations Made to [Different Region, Different Assignee] | -0.00000299*** |
| | (-5.65) |
| Citations Made to [Other] | -0.00000177 |
| | (-1.63) |
| patents | 0.00000846 |
| | (1.10) |
| Log (Patent Pool Size) | 0.646*** |
| | (24.18) |
| Constant | -5.599*** |
| | (-23.01) |
| ln_r | |
| Constant | 0.400*** |
| | (3.29) |
| ln_s | |
| Constant | 4.463*** |
| | (26.70) |
| Year Dummy | Yes |
| Observations | 2624 |

*t* statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

# 3 Trial 3 (log of all independent and control variables): We have some results

```
gen lncit_made_localinternal=ln(1 + cit_made_localinternal)
gen lncit_made_localexternal=ln(1 + cit_made_localexternal)
gen lncit_made_nonlocalinternal=ln(1 + cit_made_nonlocalinternal)
gen lncit_made_nonlocalexternal=ln(1 + cit_made_nonlocalexternal)
gen lncit_made_local=ln(1+cit_made_local)
gen lncit_made_internal=ln(1+cit_made_internal)
gen lncit_made_other=ln(1 + cit_made_other)

label variable lncit_made_localinternal "Log(Cit[Same Region, Same
   Assignee])"
label variable lncit_made_localexternal "Log(Cit[Same Region, Different
   Assignee])"
label variable lncit_made_nonlocalinternal "Log(Cit[Different Region,
   Same Assignee])"
label variable lncit_made_nonlocalexternal "Log(Cit[Different Region,
   Different Assignee])"
label variable lncit_made_local "Log(Cit[Same Region])"
```

```
label variable lncit_made_internal "Log(Cit[Same Assignee])"
label variable lncit_made_other "Log(Cit[Other])"

xtnbreg cit_recd_total lncit_made_localinternal lncit_made_localexternal
   ///
              lncit_made_nonlocalinternal lncit_made_nonlocalexternal
                 lncit_made_other ///
              lnpatents lnpool d2002-d2012 ///
              if (!missing(mean_patent_rate12) & mean_patent_rate12 >
                 200)
eststo
local reportdir /Users/aiyenggar/OneDrive/code/articles/flows-2017-01-10/
estadd local fixed "No" , replace
esttab using `reportdir'eflowsregt03.tex, ///
              title("Effect of Geographic Distribution of Citations Made
                 on Citations Received \label{eflowsreg}") ///
              indicate("Year Dummy = d20*") s(fixed N, label("Region
                 Fixed effects")) ///
              label longtable replace

xtnbreg cit_recd_total lncit_made_localinternal lncit_made_localexternal
   ///
              lncit_made_nonlocalinternal lncit_made_nonlocalexternal
                 lncit_made_other ///
              lnpatents lnpool d2002-d2012 ///
              if (!missing(mean_patent_rate12) & mean_patent_rate12 >
                 200), i(regionid) fe
eststo
estadd local fixed "Yes" , replace
esttab using `reportdir'eflowsregt03.tex, ///
              title("Effect of Geographic Distribution of Citations Made
                 on Citations Received \label{eflowsreg}") ///
              indicate("Year Dummy = d20*") s(fixed N, label("Region
                 Fixed effects")) ///
              label longtable replace
```

Table 2: Effect of Geographic Distribution of Citations Made on Citations Received

| | (1) Citations Received | (2) Citations Received |
|---|---|---|
| Citations Received | | |
| Log(Cit[Same Region, Same Assignee]) | 0.0567*** | 0.0498*** |
| | (7.97) | (6.98) |
| Log(Cit[Same Region, Different Assignee]) | 0.0623*** | 0.0407*** |
| | (8.64) | (5.94) |
| Log(Cit[Different Region, Same Assignee]) | 0.0189** | 0.0186** |

| | | |
|---|---|---|
| | (2.68) | (2.67) |
| Log(Cit[Different Region, Different Assignee]) | 0.0901*** | 0.0800*** |
| | (9.93) | (8.76) |
| Log(Cit[Other]) | 0.0132 | 0.0148* |
| | (1.82) | (2.01) |
| Log (Num Patents) | -0.110*** | -0.0437* |
| | (-6.03) | (-2.25) |
| Log (Patent Pool Size) | 0.621*** | 0.397*** |
| | (24.67) | (15.62) |
| Constant | -4.762*** | -3.162*** |
| | (-25.29) | (-17.07) |
| ln_r | | |
| Constant | 1.603*** | |
| | (12.34) | |
| ln_s | | |
| Constant | 5.787*** | |
| | (38.50) | |
| Year Dummy | Yes | Yes |
| Region Fixed effects | No | Yes |
| N | 2624 | 2624 |

*t* statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

# References