

The Rise of Female Entrepreneurs: New Evidence on Gender Differences in Liquidity Constraints

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Overview of Paper

Examine impact of liquidity constraints on entrepreneurial entry

- ▶ We focus on the importance of gender heterogeneity and household composition
 - ▶ New business/enterprise formation
 - ▶ Define a 'broad' and 'narrow' measure of an entrepreneur
 - ▶ Use unexplored dataset with rich set of wealth measures
 - ▶ Allows us to examine financial wealth vs total net assets

We use an established method to identify the impact of exogenous wealth shocks - inheritance receipt in IV approach

- ▶ Relatively small wealth shocks:
 - ▶ mean - £1,500
 - ▶ median (conditional on receiving an inheritance) - £14,000

Consistent with the literature, we find a positive relationship between wealth and entrepreneurship start

- ▶ Our analysis shows this result is driven by single women
- ▶ Financial wealth is the most salient wealth measure
 - ▶ A relaxation of financial constraints by £1,000 for single women leads to an 8.5% increase in probability of starting a business

Related Literature (1)

Liquidity constraints and entrepreneurial entry:

- ▶ Well-documented positive relationship between wealth and business formation suggestive that constraints exist
 - ▶ *inter alia*: Evans and Leighton (1989); Evans and Jovanovic (1989); Holtz-Eakin and Rosen (2005)
- ▶ Contradictions against:
 - ▶ Hurst and Lusardi (2004) - business entry rates fairly constant throughout wealth distribution
 - ▶ Nykvist (2008) finds similar patterns for Sweden, but also finds strong evidence for I.q.'s
 - ▶ Meyer (1990) - Most businesses require only small amounts of start-up capital (less than \$5,000)

Related Literature (2)

Wealth shocks ('Windfalls') and entrepreneurial entry:

- ▶ Inheritances/Gifts
 - ▶ Blanchflower and Oswald (1998); Holtz-Eakin et al (2004)
- ▶ Lottery Winnings
 - ▶ Lindh and Ohlsson (1998); Taylor (2001)
- ▶ House price shocks
 - ▶ Hurst and Lusardi (2004); Nykvist (2008); Disney and Gathergood (2009)

Female Entrepreneurship

- ▶ Male self-employment approx double that of female self-employment
 - ▶ Blanchflower and Meyer (1994); Link and Welsh (2011); ONS (2014)
- ▶ Female-led businesses and access to funding
 - ▶ Gicheva and Link (2013,2015); Gatewood et al (2009)
- ▶ **Female entry to entrepreneurship**
 - ▶ Fairlie and Marion (2010)
 - ▶ Eliminating affirmative action policies → increase in female self-employment

Entrepreneurship in the UK

- ▶ Small firms - 48% of all private sector employment
- ▶ Since 2008 increase in E driven by self-employment

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Self-employment in UK at highest level since records began

- ▶ Female self-employment up 34% (Men up by 15%)

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Mums do the business: The number of female entrepreneurs who juggle work and looking after their children is growing fast



Data - Wealth and Assets Survey

Launched in 2006 - representative survey

Initially a biennial longitudinal design

- ▶ Wave 1 - 30,600 households/53,300 individual responses
- ▶ High attrition in Wave 2
 - ▶ 20,000 households/34,500 individual responses
 - ▶ 'Respondent fatigue'/interview burden
- ▶ 12,000(8,000) new households added for wave 3(4)

Wealth of private households and individuals

- ▶ Type and level of assets/liabilities held
- ▶ Attitudes to financial planning
- ▶ Main employment activity and questions regarding business ownership
 - ▶ Date current employment activity/business started
 - ▶ Do not need to rely on longitudinal data to identify entry into entrepreneurship

Entrepreneurship and entrepreneurial entry

How to define entrepreneurship?

- ▶ Lazear (2005) "*self-employed individuals are entrepreneurs if they view themselves as having started a business.*"
- ▶ Blanchflower and Oswald (1998) "*The simplest kind of entrepreneurship is self-employment.*"

Self-employment is pervasive in literature, as often the only measure of self-employment.

Does entry to self-employment capture entrepreneurial entry?
Wage employment and entrepreneurial activity not necessary mutually exclusive:

- ▶ Experimentation - 'kitchen'/'garage' start ups
- ▶ Transition to FT self-employment if experiment works
 - ▶ So self-employment entry may measure successful entrepreneurship
 - ▶ But may not accurately capture the timing of entry

Business ownership vs Self-employment

We consider and contrast distinct measures of entrepreneurial start:

- ▶ Narrow:
 - ▶ **S/emp Starts** - e.g. Blanchflower and Oswald (1998)
 - ▶ **Business Starts** - e.g. Nykvist (2008); Fairlie (2009)
- ▶ Broad
 - ▶ Combined measure - Holtz-Eakin (1994); Nykvist (2008)

Descriptives - Employment Measures

	All individuals			Single individuals			Partnered individuals		
	All	Men	Women	All	Men	Women	All	Men	Women
S/e Main Job	0.109 (0.31)	0.156 (0.36)	0.071 (0.26)	0.085 (0.28)	0.131 (0.34)	0.058 (0.23)	0.116 (0.32)	0.162 (0.37)	0.075 (0.264)
Owns Business	0.098 (0.30)	0.147 (0.35)	0.058 (0.24)	0.067 (0.25)	0.104 (0.31)	0.044 (0.21)	0.107 (0.31)	0.157 (0.36)	0.063 (0.24)
S/e in Any Job	0.138 (0.35)	0.194 (0.40)	0.093 (0.29)	0.105 (0.31)	0.157 (0.36)	0.073 (0.26)	0.148 (0.36)	0.203 (0.40)	0.100 (0.30)
S/e (Main) starter	0.026 (0.16)	0.034 (0.18)	0.019 (0.14)	0.021 (0.14)	0.027 (0.16)	0.018 (0.13)	0.027 (0.16)	0.036 (0.19)	0.019 (0.14)
Business starter	0.039 (0.20)	0.052 (0.22)	0.029 (0.17)	0.031 (0.17)	0.040 (0.20)	0.026 (0.16)	0.042 (0.20)	0.055 (0.23)	0.030 (0.17)
S/e (Any) starter	0.042 (0.20)	0.055 (0.23)	0.031 (0.17)	0.033 (0.18)	0.042 (0.20)	0.028 (0.16)	0.044 (0.21)	0.058 (0.23)	0.032 (0.18)
N	38,027	17,215	20,812	9,045	3,529	5,516	28,982	13,686	15,296
NT	65,376	29,235	36,141	14,861	5,599	9,262	50,515	23,636	26,879

Wealth Measures

Measures of wealth used in literature differ according to data availability

- ▶ Evans and Leighton (1989); Johansson (2000) proxy wealth as difference between taxable income and wage income
- ▶ Holtz-Eakin et al (1994) - federal tax returns
- ▶ “Net assets”/“Non-business assets”

Richness of asset/liability data in the WAS allows construction of distinct wealth measures:

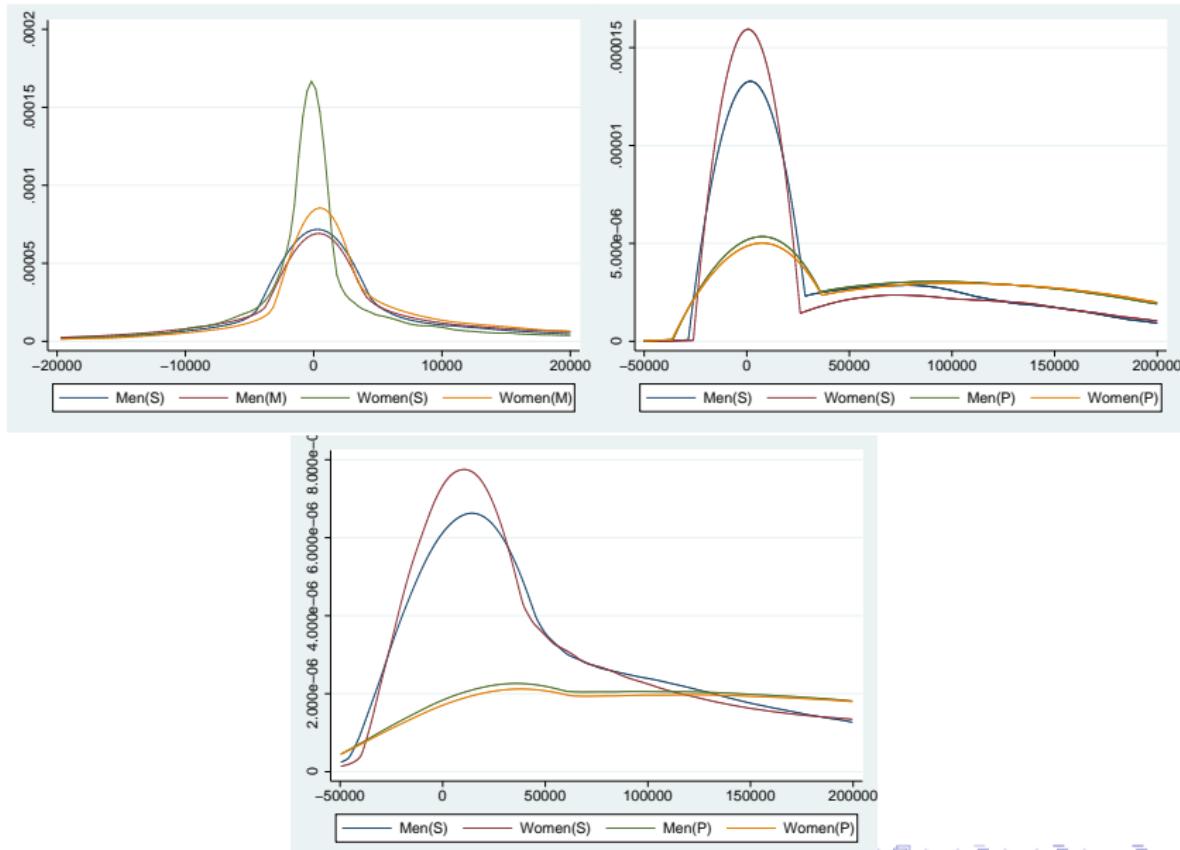
- ▶ **Liquidity** - net financial assets
- ▶ **Property** - net property wealth (residence + land/other property holdings)
- ▶ **Total** - Liquidity + Property + ‘Stuff’ (Goods, vehicles, collectibles, jewellery etc)

Do not include Pension wealth (non-collaterisable - Disney and Gathergood (2009))

Descriptives - Wealth and Demographics

	All individuals			Single individuals			Partnered individuals		
	All	Men	Women	All	Men	Women	All	Men	Women
Liquidity	11,711 (23,580)	12,743 (24,714)	10,876 (22,587)	8,643 (21,382)	11,768 (24,169)	6,753 (19,262)	12,614 (24,114)	12,974 (24,836)	12,297 (23457)
Property	113,814 (110,452)	114,139 (109,530)	113,540 (111,227)	66,077 (90,727)	68,562 (91,156)	64,505 (90,424)	127,958 (111,805)	125,063 (110,741)	130,621 (112,711)
Total Wealth	358,035 (342,167)	360,922 (340,305)	355,569 (343,735)	199,811 (259,885)	218,140 (278,592)	187,846 (246,190)	403,952 (349,403)	395,040 (344,821)	412,168 (353,382)
Age	43.49 (10.25)	44.00 (10.01)	43.08 (10.42)	42.76 (10.78)	43.14 (10.83)	42.53 (10.74)	43.71 (10.07)	44.20 (9.79)	43.27 (10.30)
UK born	0.640 (0.48)	0.647 (0.48)	0.635 (0.48)	0.656 (0.48)	0.665 (0.47)	0.650 (0.48)	0.636 (0.48)	0.643 (0.48)	0.629 (0.48)
White	0.885 (0.32)	0.885 (0.32)	0.886 (0.32)	0.898 (0.30)	0.916 (0.28)	0.888 (0.32)	0.882 (0.32)	0.877 (0.33)	0.886 (0.32)
Religious	0.797 (0.40)	0.774 (0.42)	0.816 (0.39)	0.750 (0.43)	0.709 (0.45)	0.776 (0.42)	0.811 (0.39)	0.789 (0.41)	0.830 (0.38)
D'dent Chil	0.483 (0.50)	0.457 (0.50)	0.504 (0.50)	0.320 (0.47)	0.068 (0.25)	0.472 (0.50)	0.531 (0.50)	0.549 (0.50)	0.515 (0.50)
Owns Home	0.727 (0.45)	0.742 (0.44)	0.715 (0.45)	0.472 (0.50)	0.510 (0.50)	0.448 (0.50)	0.802 (0.40)	0.797 (0.40)	0.807 (0.39)
N	38,027	17,215	20,812	9,045	3,529	5,516	28,982	13,686	15,296
NT	65,376	29,235	36,141	14,861	5,599	9,262	50,515	23,636	26,879

Wealth Distributions



Empirical Framework

OLS estimation:

$$Y_{i(-2 < t < 0)} = \beta_0 + \beta_1 W_{it} + \delta X_{it} + \eta_t + \rho_i + u_{it}$$

where $Y_{i(-2 < t < 0)}$ is a variable indicating whether individual i entered entrepreneurship within past 2 years

IV First Stage:

$$W_{it} = \gamma_0 + \gamma_1 inheritance_{i(-5 < t < 0)} + \delta X_{it} + \eta_t + \rho_i + \epsilon_{it}$$

IV Second Stage:

$$Y_{i(-2 < t < 0)} = \beta_0 + \beta_1 \widehat{W}_{it} + \delta X_{it} + \eta_t + \rho_i + u_{it}$$

Results - OLS estimation

	Liquidity		Main Property		Total Wealth	
	(1) Main	(2) Bus	(3) Main	(4) Bus	(5) Main	(6) Bus
All	0.00005 (0.0000)	0.00019*** (0.0000)	0.00003*** (0.0000)	0.00006*** (0.0000)	0.00002*** (0.0000)	0.00005*** (0.0000)
N	65,349	65,349	66,277	66,277	65,352	65,352
Males	-0.00000 (0.0000)	0.00013** (0.0001)	0.00002 (0.0000)	0.00006*** (0.0000)	0.00002*** (0.0000)	0.00004*** (0.0000)
N	29,221	29,221	30,367	30,367	29,961	29,961
Females	0.00010** (0.0000)	0.00028*** (0.0001)	0.00003*** (0.0000)	0.00007*** (0.0000)	0.00002*** (0.0000)	0.00005*** (0.0000)
N	36,128	36,128	35,910	35,910	35,391	35,391
Single Males	0.00007 (0.0001)	0.00018* (0.0001)	0.00003 (0.0000)	0.00010** (0.0000)	0.00004** (0.0000)	0.00006*** (0.0000)
N	5,592	5,592	5,867	5,867	5,863	5,863
Single Fem	0.00014 (0.0001)	0.00036*** (0.0001)	0.00006** (0.0000)	0.00011*** (0.0000)	0.00004*** (0.0000)	0.00009*** (0.0000)
N	9,257	9,257	9,276	9,276	9,180	9,180
Part'd Males	-0.00002 (0.0001)	0.00008 (0.0001)	0.00001 (0.0000)	0.00005*** (0.0000)	0.00001* (0.0000)	0.00004*** (0.0000)
N	23,629	23,629	24,500	24,500	24,098	24,098
Part'd Fem	0.00010** (0.0000)	0.00027*** (0.0001)	0.00003*** (0.0000)	0.00007*** (0.0000)	0.00002*** (0.0000)	0.00005*** (0.0000)
N	26,871	26,871	26,634	26,634	26,211	26,211

Results - IV estimation

First Stage

	Liquidity		Main Property		Total Wealth	
	(1) Main	(2) Bus	(3) Main	(4) Bus	(5) Main	(6) Bus
All N=65,349	0.0004 (0.0003)	0.0009** (0.0004)	0.0002 (0.0001)	0.0003** (0.0001)	0.0001 (0.0000)	0.0001** (0.0001)
Males N=29,221	0.0003 (0.0005)	0.0006 (0.0006)	0.0002 (0.0002)	0.0002 (0.0002)	0.0001 (0.0001)	0.0001 (0.0001)
Females N= 36,128	0.0004 (0.0004)	0.0011** (0.0005)	0.0002 (0.0001)	0.0004** (0.0002)	0.0001 (0.0000)	0.0001* (0.0001)
Single Males N= 5,592	0.0003 (0.0007)	0.0001 (0.0008)	0.0006 (0.0005)	0.0004 (0.0006)	0.0002 (0.0002)	0.0001 (0.0002)
Single Females N= 9,257	0.0012 (0.0008)	0.0022** (0.0011)	0.0003 (0.0003)	0.0007* (0.0004)	0.0001 (0.0001)	0.0002* (0.0001)
Part'd Males N= 23,629	0.0002 (0.0007)	0.0008 (0.0008)	0.0001 (0.0002)	0.0002 (0.0003)	0.0000 (0.0001)	0.0001 (0.0001)
Part'd Females N= 26,871	0.0002 (0.0004)	0.0007 (0.0006)	0.0001 (0.0002)	0.0003 (0.0002)	0.0000 (0.0001)	0.0001 (0.0001)

Discussion of results

Robustness - Future Inheritances

In our data we find that single women primarily drive the relationship between wealth and new business formation:

- ▶ Relaxing constraints on financial wealth are most salient
 - ▶ Small wealth shocks have proportionately larger impact on net financial assets
- ▶ Considering business starts as opposed to self-employment transitions matters
 - ▶ Potentially a timing issue - transition to self-employment not necessarily the entry-point to entrepreneurship

But why do we find this result especially for single women?

- ▶ Liquidity/disposable income may be more important when loan availability in short supply or lack of collateral
 - ▶ Period of analysis: 2006-2012
 - ▶ Home ownership lower for singles vs partnered individuals, and lower for single women than single men
- ▶ Characteristics of businesses in WAS
 - ▶ Women take out formal loans less often, but use own money at same rate to start a business

Characteristics of Businesses

	All individuals			Single individuals			Partnered individuals		
	All	Men	Women	All	Men	Women	All	Men	Women
Inherited Business	0.029 (0.17)	0.030 (0.17)	0.027 (0.16)	0.016 (0.13)	0.021 (0.14)	0.009 (0.10)	0.032 (0.18)	0.032 (0.18)	0.031 (0.17)
Own Money	0.773 (0.42)	0.775 (0.42)	0.770 (0.42)	0.806 (0.40)	0.809 (0.39)	0.803 (0.40)	0.767 (0.42)	0.769 (0.42)	0.762 (0.43)
Formal Loan	0.125 (0.33)	0.126 (0.33)	0.124 (0.33)	0.096 (0.29)	0.106 (0.31)	0.082 (0.27)	0.131 (0.34)	0.129 (0.34)	0.134 (0.34)
Informal Loan	0.051 (0.22)	0.054 (0.23)	0.046 (0.21)	0.046 (0.21)	0.046 (0.21)	0.047 (0.21)	0.052 (0.22)	0.056 (0.23)	0.046 (0.21)
Business Size (Employees)	5.129 (33.34)	5.439 (32.64)	4.544 (34.64)	3.275 (23.64)	3.308 (16.88)	3.230 (30.49)	5.500 (34.95)	5.803 (34.61)	4.884 (35.64)
Age of Business	8.479 (8.76)	9.246 (9.15)	7.027 (7.75)	7.838 (9.28)	9.279 (10.23)	5.897 (7.39)	8.605 (8.65)	9.240 (8.96)	7.314 (7.81)
N	4,604	3,020	1,584	753	434	319	3,851	2,586	1,265

Note men on average have larger businesses & are in business longer

- ▶ Suggests men apply for formal loans to supplement own money, start more capital intensive/riskier ventures

Types of start-up capital

	(1) Formal	(2) Informal	(3) Size	(4) Age	(5) Size	(6) Size	(7) Age	(8) Age
Female	-0.018* (0.010)	-0.009 (0.006)	-1.178 (1.089)	-2.315*** (0.242)	-1.027 (1.078)	-1.162 (1.066)	-2.314*** (0.240)	-2.344*** (0.240)
Single	-0.020* (0.012)	-0.002 (0.008)	-2.237** (1.115)	-0.461 (0.329)	-1.183 (1.161)	-1.010 (1.150)	0.127 (0.335)	0.167 (0.335)
Own Home					4.683*** (1.111)	4.978*** (1.111)	3.098*** (0.307)	3.167*** (0.307)
Formal					9.871*** (2.373)	4.823* (2.537)	0.937*** (0.347)	-0.207 (0.413)
Informal					-0.930 (1.340)	-4.633*** (1.750)	-0.532 (0.525)	-1.389** (0.560)
Own Money						-9.600*** (2.078)		-2.182*** (0.386)
N	5,448	5,448	5,300	5,401	5,298	5,298	5,399	5,399

Policy Suggestion

Our analysis suggests that policy initiatives that are targeted at liquidity-constrained women in particular could be effective in accelerating the rate of female entrepreneurship.

Existing policies to encourage entrepreneurship in the UK are often targeted policies:

- ▶ New Enterprise Allowance - targeted at individuals starting self-employment who were previously unemployed
- ▶ X-Forces - an initiative to meet the specific needs of the ex-military personnel and their families

IV - First Stage

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	Liquidity		Main Property		Total Wealth	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A						
All Individuals	1.2019*** (0.0627)	1.0712*** (0.0607)	3.8257*** (0.2247)	2.8481*** (0.1973)	9.2579*** (0.4488)	7.6765*** (0.3945)
N	65,376	65,349	66,305	66,277	65,377	65,352
Males	1.2286*** (0.0927)	1.1137*** (0.0903)	3.6267*** (0.3286)	2.8156*** (0.2917)	8.8660*** (0.6596)	7.6014*** (0.5851)
N	29,235	29,221	30,382	30,367	29,975	29,961
Females	1.1818*** (0.0850)	1.0322*** (0.0818)	3.9839*** (0.3074)	2.8573*** (0.2679)	9.5534*** (0.6111)	7.6836*** (0.5339)
N	36,141	36,128	35,923	35,910	35,402	35,391
Panel B						
Single Males	1.7207*** (0.2262)	1.6231*** (0.2244)	3.4190*** (0.5911)	2.5201*** (0.5677)	9.0821*** (1.2628)	7.4831*** (1.1558)
N	5,599	5,592	5,874	5,867	5,870	5,863
Single Females	1.3597*** (0.1643)	1.1992*** (0.1597)	4.4896*** (0.5397)	3.2800*** (0.4935)	10.5710*** (1.0729)	8.7727*** (0.9878)
N	9,262	9,257	9,281	9,276	9,184	9,180
Partnered Males	1.1052*** (0.1007)	0.9858*** (0.0974)	3.8164*** (0.3754)	2.9697*** (0.3345)	9.2451*** (0.7344)	7.8144*** (0.6678)
N	23,636	23,629	24,508	24,500	24,105	24,098
Partnered Females	1.1134*** (0.0985)	0.9704*** (0.0949)	3.6710*** (0.3548)	2.6770*** (0.3143)	9.0174*** (0.6982)	7.2467*** (0.6273)
N	26,879	26,871	26,642	26,634	26,218	26,211
Wave & Region controls	Yes	Yes	Yes	Yes	Yes	Yes
Demographic controls	No	Yes	No	Yes	No	Yes

Future Inheritances

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	Liquidity			Main Property			Total Wealth		
	(1) Main	(2) Bus	(3) Any	(4) Main	(5) Bus	(6) Any	(7) Main	(8) Bus	(9) Any
Panel A									
All individuals	0.0003 (0.0008)	0.0001 (0.0009)	0.0002 (0.0009)	-0.0000 (0.0002)	-0.0000 (0.0002)	0.0000 (0.0002)	0.0000 (0.0001)	0.0000 (0.0001)	0.0001 (0.0001)
N	17,801	17,801	17,801	17,372	17,372	17,372	17,341	17,341	17,341
First stage F-test	53.54	53.54	53.54	88.90	88.90	88.90	85.74	85.74	85.74
Males	0.0011 (0.0013)	0.0012 (0.0015)	0.0014 (0.0016)	0.0000 (0.0003)	0.0002 (0.0004)	0.0002 (0.0004)	0.0001 (0.0002)	0.0002 (0.0002)	0.0002 (0.0002)
N	7,872	7,872	7,872	7,952	7,952	7,952	7,923	7,923	7,923
First stage F-test	26.89	26.89	26.89	37.85	37.85	37.85	37.71	37.71	37.71
Females	-0.0005 (0.0009)	-0.0010 (0.0010)	-0.0009 (0.0011)	-0.0000 (-0.0000)	-0.0002 (-0.0002)	-0.0001 (-0.0001)	-0.0000 (0.0001)	-0.0001 (0.0001)	-0.0001 (0.0001)
N	9,929	9,929	9,929	9,420	9,420	9,420	9,418	9,418	9,418
First stage F-test	26.52	26.52	26.52	50.32	50.32	50.32	46.94	46.94	46.94
Panel B									
Single Males	0.0007 (0.0015)	0.0027 (0.0022)	0.0024 (0.0022)	0.0004 (0.0015)	0.0030 (0.0032)	0.0026 (0.0029)	0.0003 (0.0009)	0.0020 (0.0020)	0.0017 (0.0018)
N	1,429	1,429	1,429	1,448	1,448	1,448	1,455	1,455	1,455
First stage F-test	13.67	13.67	13.67	1.37	1.37	1.37	1.71	1.71	1.71
Single Females	0.0019 (0.0017)	0.0009 (0.0016)	0.0013 (0.0017)	0.0007 (0.0007)	0.0004 (0.0006)	0.0005 (0.0007)	0.0003 (0.0003)	0.0002 (0.0003)	0.0002 (0.0003)
N	2,439	2,439	2,439	2,256	2,256	2,256	2,248	2,248	2,248
First_Ftest	13.61	13.61	13.61	10.43	10.43	10.43	12.90	12.90	12.90
Partnered Males	0.0013 (0.0019)	0.0005 (0.0021)	0.0010 (0.0022)	-0.0000 (0.0003)	-0.0001 (0.0004)	-0.0000 (0.0004)	0.0001 (0.0002)	0.0000 (0.0002)	0.0001 (0.0002)
N	6,443	6,443	6,443	6,504	6,504	6,504	6,468	6,468	6,468
First stage F-test	15.46	15.46	15.46	41.96	41.96	41.96	37.94	37.94	37.94
Partnered Females	-0.0017 (0.0012)	-0.0020 (0.0014)	-0.0019 (0.0015)	-0.0002 (0.0002)	-0.0003 (0.0002)	-0.0003 (0.0002)	-0.0001 (0.0001)	-0.0001 (0.0001)	-0.0001 (0.0001)
N	7,490	7,490	7,490	7,164	7,164	7,164	7,170	7,170	7,170
First stage F-test	15.17	15.17	15.17	40.54	40.54	40.54	34.97	34.97	34.97