Dumping or taking on entrepreneurial ventures: the dynamics of switching between governmental and independent venture capitalists

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The paper in a nutshell

- We investigate whether and how the perceived quality of a venture and the reputation of both the incumbent VC and the new VC are affecting the propensity to switch from an IVC to a GVC and *vice versa;*
- We apply the perspective of signaling theory;
- We analyse the effect of switching the type of lead VC investor on the ventures' probability of successful exit via an initial public offering (IPO).

- We find that:
  - the lower is the perceived quality of the entrepreneurial venture and the lower is the reputation of the incumbent lead IVC, the higher is the likelihood to rematch with a (more reputable) GVC;
  - the lower is the perceived quality of the entrepreneurial ventures, the higher is the probability that they switch from an incumbent more reputable lead GVC to a new less reputable lead IVC;
  - there is not a significant impact of the switching dynamic from an IVC to a GVC (and *vice versa*) on the probability of successful exit;
  - the probability of successful exit only significantly increases when a switching occurs from an IVC to a new lead IVC.

Background and literature

- A large body of research has investigated how VCs evaluate and select potential investments (Fitza, Matusik, & Mosakowski, 2009; Fried & Hisrich, 1994; Shepherd, 1999).
- Positive sorting in the VC market: more reputable VCs invest in better ventures and higher quality ventures favour more reputable VCs (Hsu, 2004; Sørensen, 2007).
- However, the two-sided matching might be subject to a rebalancing (i.e. switching). The dynamics concerning the decision of an incumbent lead VC to "dump" a venture and that of a new VC to "take it on" have received relatively little attention.

Background and literature

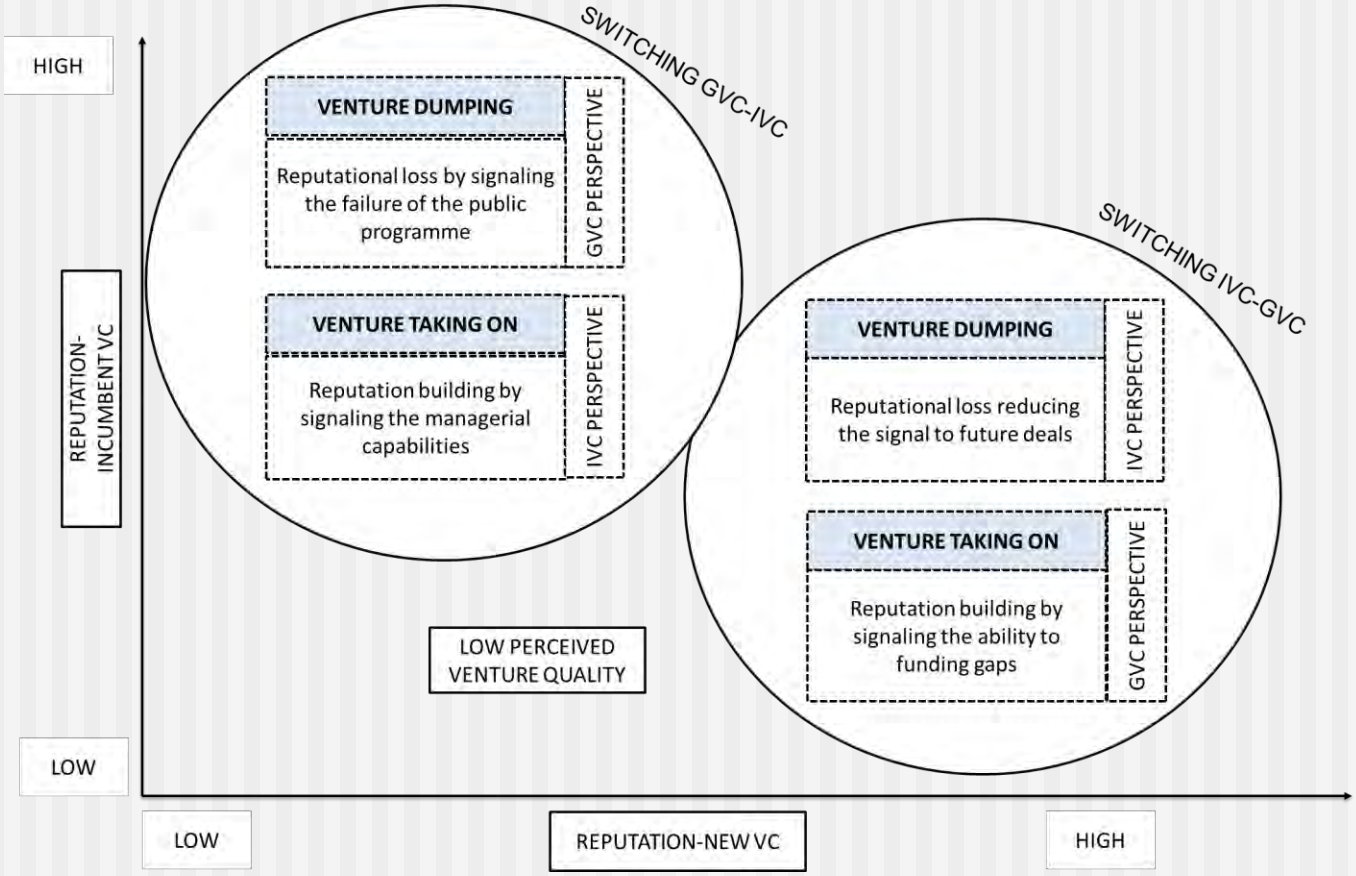
- The only paper that examines the specific issue of switching VC investor is the one by Cumming & Dai (2013).
- Non-trivial relevance of the phenomenon. From 1991 to 2002 in the US, in the 23% of the cases lead VCs of follow-on rounds of financing are different from those of previous rounds (Cumming and Dai, 2013)
- Cumming & Dai (2013) consider only the switching between IVC-IVC. They find that ventures whose perceived quality is upwardly revised are more likely to switch to more reputable IVCs and to accept lower pre-money valuation and smaller investment size in follow-on rounds.

Aim of the paper

- We add to Cumming & Dai (2013)'s study by examining the switching phenomenon in the light of the type of the VCs involved.
- We concentrate on the circumstances in which the switching occurs from a lead IVC to a governmental VC (GVC) and *vice versa*.
- We provide insights into the determinants of switching through the lenses of signaling theory and we invoke both the incumbent VC and the new VC sides of the switching decision ("dumping" vs "taking on").

Conceptual framework

- We adopt the perspective of signaling theory, under the assumption that the venture's perceived quality has been downwardly revised



Switching IVC-GVC (1)

- Reputational concerns drive both venture "dumping" by the incumbent IVC and venture "taking on" by the new GVC.

- *Perspective of the IVC "dumping"*
  - IVC reputation represents a signal of future performance, which in turn affects the IVC's ability to raise new funds (Chahine et al. 2007; Lerner, 1994; Megginson & Weiss, 1991).
  - Reputational concerns drive the decision of an IVC to "dump" portfolio ventures that are unlikely to earn the cost of capital.
  - The less reputable the IVC is, the less likely is that it takes on too high a risk by continuing to invest into low perceived quality ventures, because this might lead to a poor performance and impede reputation building.
  - A less reputable IVC could "dump" expected low perceived quality ventures in favour of a more reputable GVC given the accrued reputational benefits that a highly reputable investor would bring to him.

Switching IVC-GVC (2)

- *Perspective of the GVC "taking on"*
  - A venture's perceived quality is not necessarily a concern for a GVC because a GVC does not have to signal his ability in conducting IPOs to potential investors. It does not need to raise funds from third parties.
  - GVC is interested in building or strengthening his reputation by conveying a signal to the external environment of his ability to sustain investments that generate significant social benefits to society, even if, in some cases, at the detriment of financial returns (Leleux & Surlemont, 2003; Buzzacchi et al., 2013; Cressy, 2002; Lerner, 2002).
  - GVCs usually target specific geographical areas where their intervention is motivated by a perceived "market failure" or "financing gap" (Cressy, 2002; Lerner, 2002; Mason & Harrison, 1995).

Switching IVC-GVC (3)

- If the venture is associated with a poorly reputable IVC, a GVC foresees a financing gap to be filled. A low perceived quality venture lacking the "certification effect" that being backed by a reputable investor might engender in the VC market, will probably encounter greater difficulties in finding alternative sources of financing from other IVCs.
- A highly reputable GVC provides a signal to the financial market that the venture is valuable, thus potentially inducing other subjects (managers, investors, suppliers) to commit time and resources to it.

H1: The lower is the perceived quality of the entrepreneurial ventures, the higher is the probability that they switch from an incumbent lead IVC to a new lead GVC.

H2: The lower is the perceived quality of the entrepreneurial ventures, the higher is the probability that they switch from an incumbent lead IVC to a new more reputable lead GVC.

Switching GVC-IVC (1)

- *Perspective of the GVC "dumping"*
  - GVC investors can "dump" portfolio ventures too, because they have a financial and reputational interest in seeing the investment programme succeed.
  - This behaviour is even more evident the more reputable is the GVC. Keeping in the portfolio investments that can potentially turn into write-offs would provide a negative signal to the market about the effectiveness of the public programme and the reputation of the public body that backs it.
- *Perspective of the IVC "taking on"*
  - The core mission of a GVC is not to conduct portfolio ventures to a successful exit, but rather to provide a credible signal to private investors by seeding those ventures facing problems of resource constraints.
  - The new IVC may interpret the presence of a GVC as a credible signal of the venture potential, independently of its perceived quality.

Switching GVC-IVC (2)

- A less reputable IVC may consciously invest in low perceived quality ventures because:
  - the reputational resources of the highly reputable incumbent GVC are also transferred to the new IVC entering the deal;
  - to signal its managerial capability in bringing ventures to a successful exit (Lerner, 1994). After some level of market reputation is established, the new IVC will then move to higher quality or less risky portfolios.

H3: The lower is the perceived quality of the entrepreneurial ventures, the higher is the probability that they switch from an incumbent lead GVC to a new lead IVC.

H4. The lower is the perceived quality of the entrepreneurial ventures, the higher is the probability that they switch from an incumbent lead GVC to a new less reputable lead IVC.

Dataset

- We extracted all VC investments made in the United States from 1998 to 2010 (VentureXpert);
- We collected data from the US Bureau of Economic Analysis (BEA) on the GDP per capita and the amount of public subsidies by state and year;
- The dataset is made of investments led by only IVCs and GVCs.

- Total of 15,218 rounds of financing in 10,912 entrepreneurial ventures between 1998 and 2010.
  - 6,739 ventures received only one round of financing
  - 4,173 ventures received more than one round of financing. 2,937 ventures experienced a switching of the lead investor in at least one of the subsequent rounds (3,977 switching rounds).
  - 2,690 ventures switched from an IVC to another IVC, 316 from an IVC to a GVC and 324 from a GVC to an IVC

- A lead VC is defined as the one that, in the specific round, had invested the largest amount of capital

Method

- We only observe switching for the restricted, nonrandom group of ventures which successfully obtained more than one round of financing.
- In order to control for this selection effect, we run a sample selection model based on the **Heckman two-stage** framework:
  - First step: probability of successfully obtaining more than one round of financing
    - Regressors: stage and geographical location of the venture, the amount of round financing, whether the deal is syndicated, industry and year controls
  - Second step: probability of switching (IVC-IVC; IVC-GVC; GVC-IVC)
    - Regressors: reputation of incumbent VC, perceived venture quality, interaction between VC reputation and venture quality and controls (size of the incumbent lead VC, venture age, mismatch in stage preference, whether the new VC has already invested in the venture in the past, whether the venture and the incumbent lead VC are located in the same state, state economic conditions and level of public intervention).

Variables

- Perceived venture quality is calculated as an estimated probability of successful exit (IPO) as a function of:
  - development stage of the entrepreneurial venture in year t;
  - geographical location of the venture;
  - industry in which the venture operates;
  - size of the financing received by the venture until the year t;
  - number of rounds the venture received until the year t;
  - size of the syndicate investing in the venture in year t;

- VC reputation is defined through a multi-item index (Lee et al., 2011). Factor analysis using time variant measures:
  - total number of portfolio companies the VC invested in;
  - the total equity funds invested in portfolio ventures;
  - the number of portfolio ventures taken public;
  - VC experience;
  - size of the VC fund;
  - number of individual funds raised;
  - total number of deals of the individual fund

Results (1)

Second stage probit regression (switching IVC-IVC/IVC-GVC/GVC-IVC)

	Switching from an IVC to another IVC		*Switching from an IVC to a GVC*		*Switching from a GVC to an IVC*	
Venture quality	2.610	***	-0.655		-6.400	***
	(0.49)		(1.24)		(1.46)	
Incumbent VC reputation*Venture quality	-0.769	**	1.648		-6.429	***
	(0.33)		(1.01)		(2.03)	
Incumbent VC reputation	0.007		-0.333	***	0.044	
	(0.02)		(0.08)		(0.09)	
State with high GDP per capita	0.106	**	0.060		0.092	
	(0.05)		(0.09)		(0.1)	
High subsidised State	0.037		0.027		-0.131	
	(0.05)		(0.09)		(0.1)	
California	0.000		-0.126		0.118	
	(0.05)		(0.11)		(0.12)	
Massachusetts	-0.024		-0.394	***	-0.335	***
	(0.05)		(0.13)		(0.12)	
Venture age	-0.038	*	0.000		-0.007	
	(0.02)		(0.04)		(0.06)	
New VC previously invested	-6.312		-2.813	***	-2.090	***
	(199.2)		(0.24)		(0.19)	
Mismatch in stage preference	-0.082	**	-0.023		0.080	
	(0.04)		(0.08)		(0.08)	
Same state	-0.090	***	-0.061		0.065	
	(0.03)		(0.07)		(0.07)	
Ln (incumbent fund size/round size)	-0.051	***	0.100	***	-0.138	***
	(0.01)		(0.03)		(0.03)	
Intercept	6.344		1.796	***	2.384	***
	(199.2)		(0.31)		(0.28)	
Year dummies	Yes		Yes		Yes	
N. Obs.	14,534		9,282		9,264	
Rho	-0.483229		-0.76018		-0.7897	
p-value of LR test (rho=0)	0.000		0.000		0.000	
Log-likelihood	-11061.04		-4992.9		-4932.2	
Wald χ^2	207.06		238.04		226.95	
Prob> χ^2	0.000		0.000		0.000	

Second stage probit regression (switching IVC to a more reputable IVC, GVC and GVC to more reputable IVC)

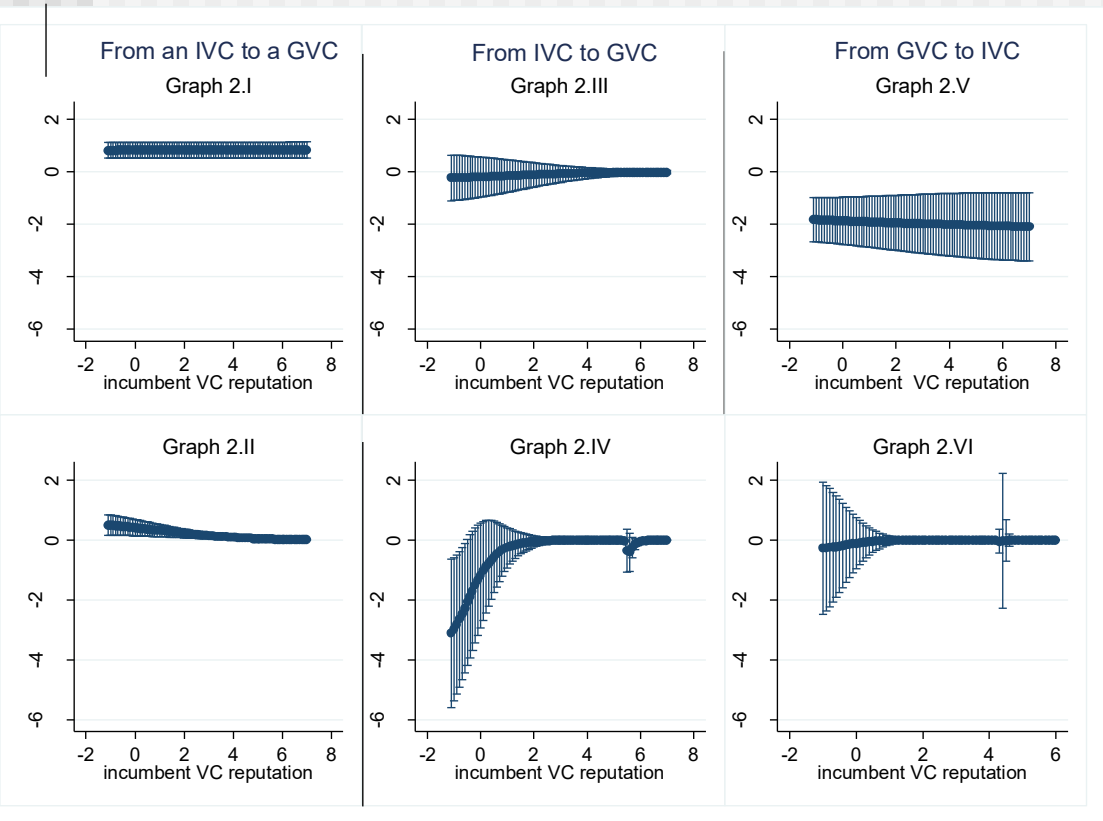
	Switching from an IVC to a more reputable IVC		*Switching from an IVC to a more reputable GVC*		*Switching from a GVC to a more reputable IVC*	
Venture quality	1.548	***	-10.687	*	-0.902	
	(0.55)		(5.69)		(3.63)	
Incumbent VC reputation*Venture quality	-3.095	***	-15.8	*	-0.621	
	(0.68)		(9.09)		(6.03)	
Incumbent VC reputation	-0.362	***	-1.059	***	-1.226	***
	(0.05)		(0.35)		(0.36)	
State with high GDP per capita	0.051		0.201		0.058	
	(0.06)		(0.15)		(0.14)	
High subsidised State	0.038		-0.172		-0.032	
	(0.06)		(0.16)		(0.14)	
California	0.087		-0.015		0.118	
	(0.06)		(0.19)		(0.17)	
Massachusetts	0.15	**	0.005		-0.092	
	(0.07)		(0.18)		(0.19)	
Venture age	-0.098	***	-0.005		0.033	
	(0.03)		(0.06)		(0.06)	
New VC previously invested	-0.872	***	-2.155	***	-1.276	***
	(0.05)		(0.26)		(0.21)	
Mismatch in stage preference	-0.043		0.036		0.007	
	(0.04)		(0.12)		(0.11)	
Same state	-0.186	***	-0.163		0.004	
	(0.04)		(0.11)		(0.11)	
Ln (incumbent fund size/round size)	-0.122	***	0.117	***	-0.161	***
	(0.02)		(0.04)		(0.06)	
Intercept	0.49	***	0.335		0.293	
	(0.15)		(0.46)		(0.47)	
Year dummies	Yes		Yes		Yes	
N. Obs.	13,501		9,209		9,197	
Rho	-0.3815		-0.7176		-0.7858	
p-value of LR test (rho=0)	0.000		0.000		0.000	
Log-likelihood	-9227.6		-4696.7		-4675	
Wald χ^2	902.93		144.97		102.42	
Prob> χ^2	0.000		0.000		0.000	

Results (2)

- In order to discuss the effects of perceived venture quality and of incumbent VC reputation on the probability of switching, it is necessary to take into account the presence of their interaction term.
- We thus estimate the **marginal effect** of perceived venture quality at the different values of the incumbent VC reputation and *vice versa*.
- The magnitude and significance of these marginal effects are reported for three models: switching from an IVC to another IVC, from an IVC to a GVC and from a GVC to an IVC.

Results (3)

Marginal effects of perceived venture quality



Switching IVC-IVC

- The higher is venture quality, the higher is the probability to switch (independently of the reputation of the incumbent lead investor).
- The probability to switch to a more reputable IVC increases in venture quality only at lower values of the incumbent VC reputation.

Switching IVC-GVC

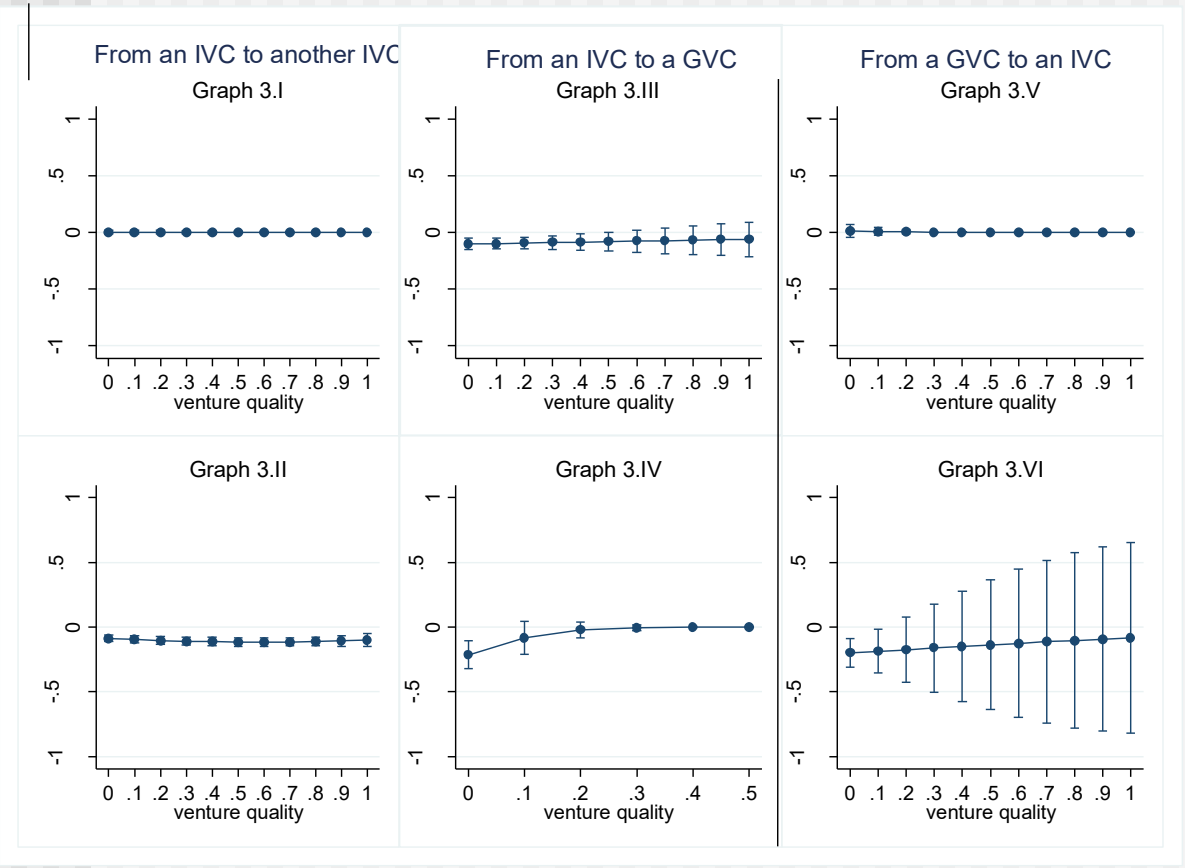
- The perceived quality of a venture does not significantly influence the probability to switch (independently from the reputation of the incumbent IVC investor).
- The lower is the venture's perceived quality, the higher is the probability to switch to a more reputable GVC.

Switching GVC-IVC

- The lower is the perceived quality of a venture, the higher is the probability to switch from a GVC to an IVC
- Low perceived quality ventures tend to switch in particular to a less reputable IVC

Results (3)

Marginal effects of incumbent VC reputation



Switching IVC-IVC

- The marginal effects of incumbent VC reputation are not significantly different from zero whatever the value of perceived venture quality.
- The lower is the reputation of the incumbent IVC, the higher is the probability to switch from an IVC to a more reputable IVC.

Switching IVC-GVC

- The lower is the reputation of the incumbent IVC, the higher is the probability to switch to a more reputable GVC and this effect is significant for low perceived quality ventures.

Switching GVC-IVC

- The reputation of the incumbent GVC has not a significant role in influencing the probability to switch to an IVC

Results (4)

Impact of switching on the probability of successful exit (probit) and on valuation (random effect model)

	IPO		*Valuation*	
Switching from an IVC to another IVC	0.079	*	0.104	***
	(0.04)		(0.033)	
Switching from an IVC to a GVC	-0.13		-0.095	
	(0.17)		(0.096)	
Switching from a GVC to an IVC	-0.019		-0.184	**
	(0.16)		(0.089)	
Massachusetts	-0.071		-0.142	***
	(0.07)		(0.010)	
California	0.138	***	-0.030	
	(0.04)		(0.049)	
Syndication size	0.028	***	0.028	***
	(0.01)		(0.009)	
Inverse Mills' ratio	0.465	***	1.794	***
	(0.15)		(0.198)	
Venture funding cumulated (logs)	0.182	***		
	(0.02)			
Number of rounds	-0.045	***		
	(0.01)			
VC reputation			0.055	***
			(0.019)	
Incumbent VC reputation			0.277	***
			(0.025)	
High tech			-0.001	
			(0.047)	
Intercept	-2.319	***	4.766	***
	(0.37)		(0.338)	
Year dummies	Yes	Yes	Yes	
Industry dummies	Yes	Yes	Yes	
Venture's stage dummies	Yes	Yes	Yes	
N. Obs.	13,973		2,408	
Wald $\chi 2$	454.90		1758.55	
Prob> $\chi 2$	0.000		0.000	
Pseudo R2	0.099		0.445	

- Only the switching from an IVC to another IVC increases the probability of exit through an IPO.
- Firms switching from an IVC to another IVC obtain higher valuations, while firms switching from a GVC to an IVC obtain lower valuations

Conclusion

- The lower is the perceived quality of the entrepreneurial venture and the lower is the reputation of the incumbent lead IVC, the higher is the likelihood to rematch with a (more reputable) GVC
  - *H1 and H2 supported*
- The lower is the perceived quality of the entrepreneurial ventures, the higher is the probability that they switch from an incumbent more reputable lead GVC to a new less reputable lead IVC
  - *H3 and H4 supported*
- There is not a significant impact of the switching dynamic from an IVC to a GVC (and *vice versa*) on the probability of successful exit
- The probability of successful exit only significantly increases when a switching occurs from an IVC to a new lead IVC

Thank you for your attention!