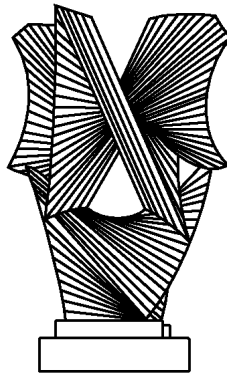


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WINNING THE ART LOTTERY: THE ECONOMIC RETURNS TO THE GANZ COLLECTION

*WILLIAM M. LANDES**

One publication called it “Ganzmania”—short for the excitement, hype and publicity blitz surrounding the 1997 Christie’s auction of 20th century art works from the estate of Victor and Sally Ganz.¹ The auction netted more than \$207 million, a record sum for a single-owner sale of art at auction. Newspapers and magazines around the world carried stories praising the couple as having remarkable foresight, sure eyes, a talent for choosing the right work and never making a mistake. The NY Times referred to the couple

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¹ Works from the Ganz collection were sold at five separate Christie’s auctions in November 1997. The most important works were sold on November 10th in an auction devoted exclusively to 58 works from the Ganz collection (of which 57 sold). I use the term “Ganz only” to denote the November 10th auction. Another 60 works (of which 57 sold) were auctioned in November at two print auctions and two contemporary art auctions (including one at Christie’s East which sells lower priced works). Works from the Ganz collection accounted for a small fraction of the total works at these auctions. I use the term “other Ganz” to denote Ganz works that sold at these four auctions. Finally, I sometimes use the term “1997 Ganz” to refer collectively to works from their collection that were sold at all five auctions.

More than 25,000 people visited Christie’s to view the works and more than 2000 people attended the auction. Christie’s marketing efforts included a symposium on the collection and the publication of both a hardbound auction catalogue and a separate book on the Ganz collection (Michael Fitzgerald, ed., *A Life of Collecting*. New York Christie’s (1997)) which featured essays by Picasso scholars and other well known figures in the art world. The Wall St. Journal (November 25, 1995 at A20) coined the term “Ganzmania.” In a later article (February 16, 1998 at B2) the Journal reported that notwithstanding the success of the auction, Christie’s earned less than expected from the sale because of undisclosed guarantees to the Ganz heirs, marketing expenses and extra costs including Christie’s purchase of the Ganz apartment.

as “the modern masters of collecting” who “were willing to take risks that less talented collectors would not have.”²

Behind the art was a “Cinderella” story as well. Victor Ganz was not a wealthy business tycoon who had acquired “trophy” art for prestige and status. Rather he operated a modest family costume-jewelry business. He and his wife were passionate about art; regularly visited galleries in New York; sought out new artists; and somehow over a fifty-year period managed to build a collection worth more than \$250 million. Among their more spectacular successes: a Picasso painting acquired for \$7000 in 1941 which sold for \$48.4 million (the second highest price ever paid for a Picasso at auction); another Picasso acquired for \$26,632 in 1956 which sold for \$31.9 million; a Jasper Johns purchased for \$15,000 in 1964 which sold for \$7.9 million; and a work by Eva Hesse acquired for \$3,375 in 1972 which sold for \$2.2 million.³

Of the 114 works sold in 1997 (four did not sell), ten brought in more than \$171 million (nearly 83 percent of the total). The Ganzes’ initial cost: \$420,460 (including \$200,000 for a Picasso in 1967 and \$80,000 for a Jasper Johns in 1974) or about \$2 million in 1997 dollars.⁴ Eighteen works sold for more than \$1 million apiece and together accounted for over \$200 million or nearly 97 percent of the total \$207 million—their initial cost \$764,453 (including \$250,000

² See the NY Times at B1 (November 6, 1997).

³ Unless stated otherwise, the price of a work includes the buyer’s premium. In the 1997 auction, the premium is 15 percent on the first \$50,000 and 10 percent above \$50,000. The net price received by a typical seller excludes both the buyer’s premium and a small seller’s commission (2 percent when the total number of works consigned by the owner sell for \$2 million or more). What the Ganz estate actually received from the sale of a work is unclear, because the auction catalogue notes that Christie’s “has a direct financial interest in all property in this sale.” In the paper, I use the term the “Ganzes’ rates of return” for calculations that assume that the estate received the net price (price less buyer’s premium and seller’s 2 percent commission) for each work. In light of the above, however, a better description of these returns would be the “return the estate would have received if they had bargained for and received the standard terms published in the auction catalogue.” For brevity, however, I use the term “Ganzes’ rate of return.”

⁴ This sum includes a Picasso acquired in 1963 (which sold for \$8.35 million) in exchange for two earlier Picassos that cost the Ganzes \$9,000 in 1950.

for a Frank Stella in 1980) or about \$3 million in 1997 dollars. Only one work (a Johns acquired in 1991 four years after Victor Ganz died) sold for less than its purchase price (\$607,500 versus \$730,688).

The 1997 auction was not the only time the Ganzes sold major works at auction. Earlier, they sold 14 paintings (12 at Sotheby's in 1988 and 2 at Christie's in 1986) for \$48.7 million: their cost just \$288,968 (for 13 of the 14) or about \$1 million in 1988 dollars.⁵

This paper is about the monetary returns from owning art. Not any art or a random sample of art sold at auction but works owned by the Ganzes: a collection of works, many of which turned out to be modern masterpieces, that were acquired for modest amounts by a couple who, as the title suggests, won the art lottery. To be sure, they were lucky but they may also have possessed special skills that enabled them to spot and buy undervalued works. I will say something about this later in the paper.

As other empirical studies of the art market do, I ignore the non-pecuniary or consumption returns from owning art. No doubt these returns were great for the Ganzes. Not only did the Ganzes love the art they owned but they were widely praised, admired and celebrated for their collection. So the financial returns presented here are only a part—possibly just a small part—of the full returns the Ganzes received from their art collection.⁶

The paper is organized as follows. Part I presents estimates of the Ganzes' overall financial returns on their art. What makes this possible is that the Ganzes maintained records of the prices they paid for each work.⁷ I also compare these returns to the returns from investments in financial assets and art in general. Part II examines

⁵ In the 1986 and 1988 auctions the buyers premium was 10 percent as opposed to the 15 and 10 percent rates in 1997. Thus, calculations from the 1986 and 1988 auctions reflect the 10 percent premium.

⁶ The Ganzes fame as art collectors may have influenced their financial returns as well. By collecting artists like Johns and Hesse early in their careers, the Ganzes may have helped enhance the reputation and market value of these artists.

⁷ Christie's published this information prior to the auction. See "A Life of Collecting" at 230–237 and the descriptions of each work in the various auction catalogues.

differences in the returns among individual works in the Ganz collection in order to distinguish luck from systematic skill in investing in art. The results generally support the hypothesis that the Ganzes were not simply lucky, but were skillful as well. Part III tests whether works from the Ganz collection command higher prices than comparable works. A price premium might exist, for example, if buyers derive prestige or status or other benefits (e.g., quality assurance or an association or celebrity value) from owning works from the Ganz collection. Data on auction prices of works in the Ganz collection and other comparable works (including “identical” prints auctioned during the 1987-1996 period) support the presence of a significant price premium. Part IV provides some concluding remarks.

I. THE FINANCIAL RETURNS

A. *The Data*

The study focuses on the financial returns to 73 of the 114 works from the Ganz collection that were auctioned at Christie’s in 1997 plus an additional 13 (out of 14) paintings sold at two auctions in the 1980s. The 73 works accounted for nearly all (99.5 percent of \$207 million) of the revenue from the 1997 auction;⁸ and the 13 paintings accounted for about 92 percent of the \$49 million from the 1986 and 1988 auctions. The study is limited to these 86 works because they are the only ones for which I have information on both the initial purchase and subsequent sale price—both of which are necessary to calculate financial returns. Since the Ganzes acquired more than 1000 works during their lifetime, the question arises whether the financial returns from this small sample provides a reasonably accurate estimate of their overall financial returns from collecting art. There are several reasons why this is probably so.

⁸ The 41 works not included in our sample include 38 prints, two small drawings and a sculpture. The drawings and sculpture sold for \$51,175 and 38 prints for \$726,290. Since these works probably cost very little to purchase, the inability to include them in the study will not have any material effect on the rate of return calculations.

First, most works absent from this study are prints. Prints are the least expensive works so the potential bias in overall returns should be small. One can get a rough idea of the relative monetary importance of prints by noting that the 52 Ganz prints sold at Christie's in 1997, which were among the more important prints owned by the Ganzes, accounted for less than one percent of the total revenues from the Ganz collection. In addition, data from the 1997 auction indicate that the financial returns on prints and unique works in the Ganzes' collection are comparable.⁹ In short, the failure to account for prints (many of which were retained by the estate and never sold) should not significantly affect the calculations of financial returns. In any event, it may be more accurate to view this study as mainly covering the financial returns from unique works rather than all works from the Ganz collection.

Second, the published chronology of works acquired by the Ganzes claims to be nearly complete for unique works. Since our sample contains almost 80 percent of the unique works the Ganzes sold (75 out of 96 works) and since the remaining 21 works are by the same artists and were acquired around the same time as the sample works,¹⁰ the estimates of financial returns I present should accurately reflect the returns from unique works. On the other hand, the sample contains less than half of the approximately 174 unique works acquired by the Ganzes from 1941 through 1991. In addition to the above 96 works, the Ganzes gave 8 to museums, exchanged 2 for a work in the sample, and retained 68 in the estate (including 4 that did not sell at the 1997 auction). Again, these works are by the same artists (e.g., Picasso, Johns, Rauschenberg and Eva Hess) as the works sold at auction. At a minimum, therefore, this study gives an accurate picture of the financial returns from works sold at auction.

⁹ Note, however, that I can only estimate the returns for 11 prints and they may not be representative of the prints owned by the Ganzes. They contain several of most famous prints by Picasso, Jasper Johns and Rauschenberg and accounted for 58 percent (\$939,000 out of \$1,618,600) of total revenue from the 52 Ganz prints sold at auction (based on "hammer prices" which exclude the buyer's commission).

¹⁰ I lack the sales price of 17 works sold privately to galleries and museums, and the acquisition cost of 4 works sold at auction.

B. Financial Returns

Tables 1 and 2 present data on works sold from the Ganz collection at the 1997 and 1986/1988 auctions respectively. Column (1) lists the year the auctioned works were acquired; column (2) the number of works acquired each year; columns (3) and (4) the acquisition cost in current and in 1997 dollars (Table 1) or in 1986 or 1988 dollars (Table 2); column (5) the buyer's price (including the buyer's premium but excluding any sales taxes); and column (6) the Ganzes' net revenue after deducting both the buyer's premium and the seller's commission. Recall, however, that the actual amount the estate received may differ from the net revenue because of the terms negotiated between the estate and Christie's. For comparison purposes, the next two columns present data on the values in 1997 (Table 1) or 1986/1988 (Table 2) of investing equivalent amounts in diversified portfolios of large company stocks (column (7)) and small company stocks (column (8)).¹¹ For example, if the Ganzes had invested \$7,000 in 1941 in large company stocks instead of purchasing a Picasso for the same amount, Table 1 shows that the stocks would have been worth nearly \$7.9 million in 1997. But a \$7,000 investment in small company stocks in 1941 would have been worth \$47.8 million in 1997 or about the same as the Picasso painting (but more than the net amount after deducting the buyer's premium and seller's commission).

Overall, Tables 1 and 2 indicate the works from the Ganz collection did considerably better than equivalent dollar investments in common stocks. The last row of Table 1 shows that equivalent investments in stocks would have been worth between \$47 million (large company stocks) and \$133 million (small company stocks) in

¹¹ This is based on the total return to stocks over the relevant periods which assumes that all dividends are reinvested. Large company stocks are represented by the Standard and Poor's 500 Stock Composite Index and small company stocks by fifth capitalization quintile of stocks on the New York Stock Exchange for 1941–1976 and the performance of the Dimensional Fund Advisors Small Company Fund thereafter. (See Ibbotson Associates, *Stock, Bonds, Bills, and Inflation 1998 Yearbook*.)

November 1997 compared to the \$184 million or so the Ganzes netted from the \$207 million sale at Christie's in 1997.¹² A similar results holds for the two earlier auctions in Table 2: the Ganzes earned considerably more from investing in art than in stocks.

Year	No. of Works	Price Paid	Price Paid in 1997 \$\$	Buyer's Price	Ganzes' Revenue	1997 Large Company Stock Value	1997 Small Company Stock Value
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1941	1	7,000	76,762	48,402,500	43,120,000	7,853,856	47,766,733
1948	1	5,000	33,444	1,432,500	1,274,000	2,210,838	5,376,223
1949	1	5,000	33,866	607,500	539,000	1,861,059	4,489,929
1952	1	11,000	66,913	8,802,500	7,840,000	2,117,772	6,409,632
1956	5	106,978	634,002	71,842,500	63,994,000	9,722,087	33,052,141
1958	2	761	4,242	59,225	50,470	54,033	166,802
1959	1	360	1,994	34,500	29,400	22,847	68,294
1962	1	721	3,847	123,500	107,800	39,311	120,680
1963	4	29,751	156,730	8,390,650	7,468,580	1,321,396	4,031,565
1964	2	15,180	78,936	7,952,400	7,081,480	578,814	1,665,285
1965	4	5,098	26,086	2,512,500	2,229,500	172,848	394,499
1966	2	6,385	31,767	544,000	480,200	240,728	531,398
1967	2	211,000	1,018,359	31,135,000	27,734,000	6,416,718	9,566,292
1968	1	1,890	8,755	2,185	1,862	51,752	63,019
1969	2	2,760	12,123	1,633,000	1,450,400	82,600	122,790
1970	1	1,500	6,232	483	412	43,162	80,824
1971	1	16,500	65,674	123,500	107,800	415,333	763,151
1972	5	81,750	315,266	7,457,800	6,636,560	1,729,582	3,620,528
1973	4	19,070	69,236	62,330	53,116	472,781	1,222,319
1974	4	6,918	22,620	22,253	18,963	233,244	553,898
1975	13	103,350	309,666	8,608,545	7,658,014	2,539,681	5,414,864

¹² I say "approximately" because my calculation assumes the Ganzes received 98 percent (i.e., they paid a 2 percent commission) of the hammer price (which excludes the buyers premium) for each work. As noted earlier, the actual amount the Ganzes received is not known because of Christie's undisclosed guarantees and "ownership" interest in some works.

Year	No. of Works	Price Paid	Price Paid in 1997 \$\$	Buyer's Price	Ganzes' Revenue	1997 Large Company Stock Value	1997 Small Company Stock Value
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1976	5	18,250	51,703	470,460	411,012	362,125	607,573
1977	1	4,000	10,640	112,500	98,000	85,513	106,213
1979	1	27,500	61,061	387,500	343,000	465,813	412,265
1980	3	283,500	554,614	4,303,000	3,826,900	3,626,443	3,038,475
1981	2	110,000	195,072	632,000	558,600	1,479,727	1,035,265
1985	2	126,382	189,337	197,400	172,480	813,850	571,817
1991	1	730,688	864,808	607,500	539,000	1,943,992	2,220,978
Total 1997		1,938,290	4,903,755	206,459,731	183,824,549	46,957,905	133,473,452

Notes: (1)"Year" denotes year works acquired.
(2)Includes a work in 1965 and another in 1974 that were were gifts from the artist.
(3)Data on stock prices from Ibbotson Associates, Stock, Bonds, Bills, and Inflation 1998 Yearbook, Tables B-1 and B-3.

Year Acq.	No. of Wks.	Price Paid	Price Paid in 1988 Dollars	Buyer's Price	Ganzes' Revenue	Large Company Stock Value	Small Company Stock Value
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Christie's 1986 Auction</i>							
1969	2	3500	10,452	286,000	254,800	19,271	36,773
<i>Sotheby's 1988 Auction</i>							
1953	1	30,000	132,921	15,400,000	13,720,000	1,319,494	4,920,010
1954	1	-	-	4,400,000	3,920,000	-	-
1956	2	28,018	121,858	8,305,000	7,399,000	575,971	2,278,395
1958	1	31,000	126,896	2,860,000	2,548,000	498,220	1,789,580
1963	2	73,500	284,154	9,790,000	8,722,000	738,432	2,621,439
1964	1	15,000	57,242	4,290,000	3,822,000	129,377	433,107
1968	3	82,950	281,982	8,167,500	7,276,500	513,785	727,970
1980	1	25,000	35,892	115,500	102,900	72,324	70,523
Total 1988		285,468	1,040,943	53,328,000	47,510,400	3,847,603	12,841,023

Table 3 presents rates of return calculations (both nominal and real) based on data from Tables 1 and 2.¹³ To illustrate, consider the 73 works sold at Christie's in 1997. The annual expenditures on

Auction	Work		Ganzes		Large Co. Stocks		Small. Co. Stocks	
	<i>Nominal</i>	<i>Real</i>	<i>Nominal</i>	<i>Real</i>	<i>Nominal</i>	<i>Real</i>	<i>Nominal</i>	<i>Real</i>
1997	17.09	12.06	16.77	11.74	12.76	7.81	15.86	10.85
1986	29.57	21.49	28.69	20.67	10.56	3.66	14.84	7.68
1988	20.22	14.73	19.77	14.29	10.68	5.39	15.50	10.11

these works (\$7000 in 1941, \$5000 in 1948 and 1949 and so forth up to \$730,688 in 1991) yielded nominal returns of 17.09 percent for the works and 16.76 percent for the Ganzes (after deducting the buyer's premium and seller's commission), and corresponding real rates of 12.06 and 11.74.¹⁴ The 1986 and 1988 auctions yielded even greater returns: nominal returns between 20 and 30 percent and real returns between 14 and 21 percent. Overall, the Ganzes beat—often by a wide margin—the returns from common stocks.¹⁵ Note, however, that the high returns for 1986 are based on the sale of only

¹³ I estimate rates of returns assuming annual compounding.

¹⁴ I calculate the nominal returns for the 1997 auction by solving for the return that sets the annual investments in art (e.g., \$7000 in 1941, \$5000 in 1942 and so forth up to \$730,688 in 1991) equal to the amount realized at the auction (\$207 million for the works or \$184 million for the Ganzes). The stock market returns are calculated the same way. I find the rate of return that sets the hypothetical annual investments in stocks (\$7000 in 1941, \$5000 in 1942 and so on) equal to either \$47 million (large company stocks) or \$133 million (small company stocks). Real returns for the 1997 auction are calculated using annual investments converted into 1997 dollars (column (4) in Table 1). I use the same method for calculating real returns for the two earlier auctions converting the annual investments into either 1986 or 1988 dollars depending on the auction.

¹⁵ The returns on works sold at the 1997 auction are slightly higher if one excludes the one painting in the sale that Mrs. Ganz purchased in 1991 after her husband's death. That painting (a work by Jasper Johns) cost \$864,898 (in 1997 dollars) and sold for \$607,500 (see Table 1). Excluding that painting increases the return by .3 to .5 percent.

two works for \$286,000 compared to the more than \$53 million for the works at the 1988 auction.

Several additional points are worth noting.

1. The stock market returns in Table 3 assume that all annual dividends and other distributions are reinvested tax-free in the periods between purchase and sale. Since most individuals will pay taxes on these distributions, Table 3 tends to overstate the investor's return from stocks and hence understate the differences between the returns from art compared to stocks. More generally, Table 3 presents before-tax returns since I make no adjustment for any kind of taxes (income, sales or capital gains) on either stocks or art.

2. The rate of return calculations for art do not allow for the costs of insuring, displaying, storing, transporting, cleaning and conserving the works of art. Although these costs tend to be minimal, their exclusion would bias upward the returns from art. On the other hand, the stock market returns do not take account of commissions and management fees and thus are biased upward.

3. The nominal and real returns are higher for works sold at the 1986/88 auctions than the 1997 auction. This may appear surprising in light of Christie's extraordinary promotional efforts in 1997 and the recently acquired celebrity status of the Ganzes, both of which should have increased the demand for these works relative to paintings auctioned in the 1980s. On the other hand, prices in the art market peaked around 1990 and are still below that level today.¹⁶ Thus, the overall market decline since 1990 appears to have

¹⁶ The Daily Telegraph Art 100 Index based on the works of 100 artists of different nationalities has fallen by roughly 50 percent from the end of 1990 through the period of the Ganz auction in late 1997 (from a peak of 9560 on 10/31/97 to 4522 on 11/30/97 where 1975 = 1000). Several recent econometric studies also confirm that art prices peaked in 1990 and have not returned to that level. See Czujack, C. "Picasso Paintings at Auction, 1963 - 1994," 21 *J. Cultural Economics* 229 - 247 (1997); Ginsburgh, V. and Penders, A.-F., "Land Artists and Art Markets," 21 *J. Cultural Economics* 219 - 228 (1997); and De la Barre, M., Docclo, S. And Ginsburgh, V., "Returns of Impressionist, Modern and Contemporary European Painters, 1962 - 1991," 35 *Annales d'Economie et Statistique* 143 - 181 (1994).

dominated any promotion or celebrity effect. Another possibility is that the Christie's promotional efforts only increased the prices and returns for the 57 works sold at the "Ganz only" auction whereas the returns in Table 3 also include works from the Ganz collection that were sold at the contemporary and print auctions in the Fall of 1997. I consider this possibility later.

4. Finally, I remind the reader that my calculations of the Ganzes' returns in Table 3 net out the usual buyer's premium and seller's commission. But as noted earlier, the actual amount the estate received is not known because of Christie's undisclosed guarantees and "ownership" interest in some works.

C. The Ganz Collection Compared to Overall Investment Returns in Art

Studies of the art market that roughly overlap the artists in the Ganz collection or the time period over which the Ganzes acquired their works find comparable but still lower returns than works in the Ganz collection. For example, Goetzman reports annual real returns of 13.2 percent for works auctioned over the period 1900 to 1986 (and annual nominal returns ranging from 7 to 23 percent in the 1950 to 1986 period).¹⁷ Czujack estimates an 8.3 percent real return for Picasso paintings sold at auction over the period 1966 to 1994 (but 15.9 percent from 1966 to 1990—the peak price year in her sample).¹⁸ Several co-authored papers by Ginsburgh estimate returns from samples that also overlap the time period of the Ganz collection. In one paper, Ginsburgh estimates a 14.9 percent nominal return on 82 well known Impressionist, Modern and Contemporary European painters for works auctioned from 1962 to

¹⁷ See Tables 1 and 2 in William N. Goetzmann, "Accounting for Taste: Art and the Financial Markets Over Three Centuries," 83 *Amer. Econ. Rev.* 1370 (1993).

¹⁸ Czujack estimates a hedonic model of Picasso paintings and includes a dummy variable for the 126 works (about 14 percent of her sample) that are sold more than once. The coefficient on this variable is negative (-.139) and highly significant. This implies a lower return on resales. Returns based on resales provide a more appropriate comparison to the returns on the Ganz works which were also calculated from resales (though the initial purchases were from dealers not auction houses).

1990 (the peak price year in his sample) but 11.9 through 1991.¹⁹ In another paper, he estimates annual nominal returns of 15.5, 18.9 and 23.8 percent respectively from samples of American painters, conceptual artists and minimal artists in the 1972 to 1991 period.²⁰

Price movements in the Daily Telegraph Art 100 Index provide one more comparison. The nominal (as opposed to real) return on the Daily Telegraph Art index from its inception in 1975 through 1997 is 7.1 percent per year versus 17 percent for the Ganz collection.²¹ One can also combine the De la Barre et al returns with the Daily Telegraph index to estimate the average return from 1962 to 1997, which closely tracks the period over which the Ganzes' acquired and auctioned their collection. This yields an overall return of 9.2 percent. Finally, a recent survey of more than twenty studies of art returns, from auction data covering the past 350 or so years, finds returns that are far below the double-digit returns of works in the Ganz collection.²² In short, the empirical evidence indicates that

¹⁹ See De la Barre, M., Docclo, S. And Ginsburgh, V., "Returns of Impressionist, Modern and Contemporary European Painters, 1962 - 1991." 35 *Annales d'Economie et Statistique* 143 - 181 (1994). Note that Czujack has extended this data through 1994 and finds returns of 7.2 percent the sample of well known painters from 1966 through 1994. (This is calculated from the data that underlie Figure 1 in Czujack (1997)).

²⁰ See Table 3 in Ginsburgh, V. and Penders, A.-F., (1997) "Land Artists and Art Markets". *J. Cultural Economics* 21: 219 - 228.

²¹ Note that the nominal return of the Daily Telegraph Index was 13.3 percent from 1975 through November 1988 (which coincides with the auction of 12 works by Ganzes at Sotheby's) though only 7.2 percent from 1975 through May 1986 (the date on which the Ganzes sold two works at Christie's).

²² See Frey and Eichenberger, "On the Return of Art Investment Return Analyses," 19 *J. Cultural Economics* 207 (1995). Note also that there are several reasons why returns from auction records alone probably overstate the returns to collecting art. Collectors often buy from dealers at prices that tend to be higher than auction prices; some works become essentially worthless and never appear at auction (i.e., auction data have a selection bias that favors works with positive monetary value); and auction data overstate average prices realized by sellers because they exclude bought-in works that fail to make the reserve price. One factor may work in the opposite direction. Many of the most prized and valuable works are in museums and do not show up at auction.

with few exceptions the Ganzes earned higher returns than the returns in the art market.

II. RETURNS TO THE INDIVIDUAL WORKS

There are two competing explanations why the Ganzes earned exceptionally high returns. One is pure luck—i.e., the Ganzes bought art primarily for aesthetic pleasure but, unlike most other collectors, they were very lucky: what they liked and acquired turned out to be great investments. Thus, the high returns they earned required no more skill than buying a winning lottery ticket. The other explanation adds skill or ability as a contributing and possibly important factor. Here the claim is that the Ganzes were able to recognize undervalued works by artists such as Picasso, Johns and Hesse whose reputations were still growing or not yet secure. Their prescience was eventually rewarded. By buying ahead of others and being patient (and lucky also), they were able to sell the works they collected for substantial profit.

One can discriminate between skill and luck alone by comparing the returns among different groupings of works separated by time and type. Consider an unrelated but helpful example. Suppose an investment advisor beats the stock market this year by a wide margin. If he was just lucky, he will probably not repeat his success in the future; but if he has special skills for picking winners, he should earn high returns in other periods as well. Similarly, if the Ganzes had no special skill in acquiring art, they might pick a few winners from time to time but would not consistently do so. To illustrate, suppose their high overall returns were driven by lucky purchases before 1960. Then they should earn “normal” returns for works purchased in other periods. But if the Ganzes consistently earned high returns from works purchased in different periods, luck is probably not the full explanation.²³ To take another example, suppose the Ganzes were just lucky to have bought Picassos. Then

²³ I say “probably” because it is possible though unlikely for one to be lucky in several consecutive periods. For example, if the probability of beating the “market” by a significant amount is say .2 then the probability of doing this four times in a row is .2⁴ or .0016 or less than two in a thousand.

they should earn lower returns on works by other artists. Or perhaps they were lucky buying paintings but not prints. Again, skill implies high returns on both paintings and prints. Of course, one can't rule out the small chance that they were lucky all the time. Still, luck tends to be associated with a few occasional high returns whereas skill (plus luck) should produce relatively high returns most of the time.

A. Returns on Groupings of Works

The data in Table 4 suggest that the Ganzes' consistently earned high returns independent of the particular period, type of work (unique or non-unique) or artist (Picasso, Johns and others). In 8 of the 9 categories in Table 4 the Ganzes beat the stock market and often by a wide margin. Except for one period (works acquired from 1976 to 1991), the real returns across different time periods, types of works and artists are all above 10 percent and most are in the 11 to 12 percent range. In short, Table 4 supports the

Groups	No Works ¹	Ganz	Large Co. Stocks	Small. Co. Stocks
<u>Acquired</u>				
Before 1960	12	11.53	7.79	11.10
1960 - 1969	17	12.19	6.36	8.50
1970 - 1975	27	12.94	8.42	11.92
1976 - 1991	15	9.17 ²	12.18	11.46
Unique	60	11.73	7.79	11.14
Non Unique	11	10.90	8.41	10.25
Picasso	16	11.56	7.52	10.83
Johns	9	14.31	8.51	11.40
All Others	46	12.18	9.61	10.68
Notes: ¹ The number of works excludes two unique works (1 in 1965 and 1 in 1974) that were gifts from the artists to the Ganzes. ² The return is 10.41 if the 1991 purchase by Mrs. Ganz (the only work in the 1997 auction that was purchased after Mr. Ganz's death in 1987)				

proposition that the Ganzes were not just lucky but possessed special skill or ability in collecting art.²⁴

Table 5 also supports the skill hypothesis. Here I divide the works auctioned in 1986 and 1988 into different time periods and different artists. Although the number of observations per category is small (especially for individual artists), the Ganzes earned uniformly high returns and handily beat the stock market in all categories.

Table 5				
Real Rates of Returns for Different Groups of Works Sold at 1986 and 1988 Auctions				
Groups	No. Works	Ganz	Large Co. Stocks	Small. Co. Stocks
<i>1988 Auction</i>				
1950 - 1959	4	13.47	6.09	10.60
1960 -1980	7	16.16	4.16	9.16
<i>1986 and 1988 Auction</i>				
Picasso	5	13.40	5.40	10.01
Johns	2	18.67	3.30	7.70
Rauschenberg	2	18.98	3.20	6.08
F. Stella	2	15.45	5.01	5.94
Cy Twombly	2	20.67	3.66	7.68

B. Returns on the Individual Works

Figure 1 plots the frequency distribution of real rates of return for each Ganz work (71 from the 1997 auction and 13 from the 1986 and 1988 auctions). The returns range from a low of - 9.6 to a high of 29.6 and include 11 negative returns (all from the 1997 auction).²⁵

²⁴ Note that the Ganzes' real returns in Tables 4 and 5 net out both buyers premiums and sellers commissions.

²⁵ This compares to negative returns for more than 40 percent of the auctioned works in Baumol's (1986) study and 27 percent for works sold between 1950 and 1987 in Brunos S. Frey and Werner W. Pommerehne, "Muses and Markets: Explorations in the Economics of the Arts: 101-118 (Basil Blackwell) (1989). study. The range of returns in these studies (-19 to + 27 in Baumol and -19 to + 26 in Frey and Pommerehne), however, is comparable to the range for the 84

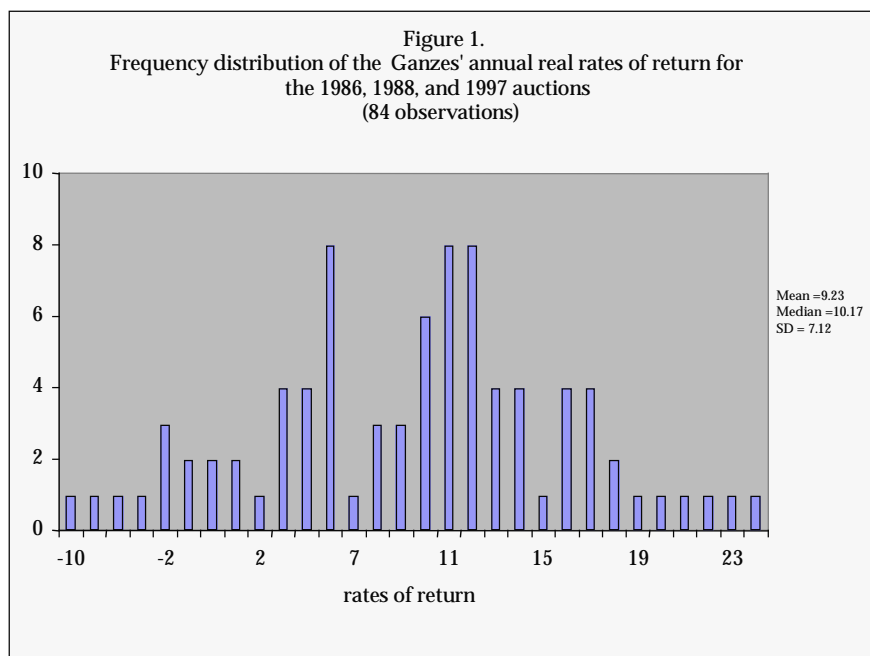


Figure 1 shows that the high overall returns in Table 3 did not result from a few lucky purchases. Nearly 40 percent of the annual real returns exceeded 12 percent; and 20 percent exceeded 15 percent. Still, the variability of returns suggests that luck played at least some role in the Ganzes' financial success.

Table 6 presents a regression analysis of the Ganzes' real rates of return for the individual works. The regression equation includes the categorical variables examined in Tables 4 and 5 plus several additional variables noted below.²⁶ The regression has 83

Ganz works. I add that the negative returns push the unweighted mean return down to 7.94 as opposed to an overall return of 11.7 percent in Table 3 for works auctioned in 1997.

²⁶ The independent variables are defined as follows.

- (1) **Auc8688**: auction dummy variable (works auctioned in 1986 and 1988 take the value 1 and works auction in 1997 take the value 0).
- (2) **Acq60, Acq69 and Acq75**: dummy variables that take the value 1 for the time periods in which the Ganzes acquired the various works—Acq60 for

<i>Variable</i>	<i>Regressions Coefficients</i>	<i>(t-ratio)</i>
Auc8688	.053	(2.64)
Acq60	-.011	(0.25)
Acq69	.025	(0.86)
Acq75	-.039	(1.62)
Unique	.025	(1.08)
Age	.001	(0.48)
Price	-.001	(2.08)
Death	.036	(1.70)
Picasso	-.021	(0.27)
Johns	.057	(2.23)
Rausch	.032	(1.03)
Stella	-.004	(0.16)
Constant	.025	(0.35)
R ²	.30	

works acquired before 1960; Acq69 for works acquired between 1960 and 1969; and Acq75 for works acquired between 1970 and 1975. The omitted category is post 1975 purchases. Note that most of the 83 works in the sample were held for at least twenty years (62 of the 71 works sold in 1997, and 11 of the 12 sold in 1988). The 2 works sold in 1986 were held for 17 years and only 3 works were held for less than 10 years.

- (3) **Unique:** dummy variable that takes the value 1 if the work is unique and 0 if it is not (e.g., a print). The sample breakdown is 72 unique and 11 non-unique works.
- (4) **Age:** artist's age at the time the work was bought.
- (5) **Price:** price (in 1997 dollars) that the Ganzes' paid (in \$10,000s) for each work. Here I test whether lower priced works yielded higher returns.
- (6) **Death:** dummy variable that takes the value 1 if the artist is still alive at the time of the auction and 0 otherwise. There are four deceased artists in the sample (Hesse in 1970, Picasso in 1973, Smithson in 1973 and Williams in 1988).
- (7) **Picasso, Johns, Rauschenberg and Stella:** dummy variables that take the value 1 for a work by that artist and 0 otherwise.

observations (70 works from the 1997 auction and 13 from the 1986 and 1988 auctions).²⁷

The regression equation in Table 6 indicates that works sold in the 1997 auction yielded significantly lower returns (about 5.3 percent lower) compared to the 1986 and 1988 auctions. The only other significant variables in Table 6 are the original price (lower prices are associated with a slightly higher rate of returns) and works by Jasper Johns (which yield higher returns). Note, however, that the four artist variables are jointly insignificant—that is, the observed differences in average returns among the four named artists including Johns and the other artists taken as a group are not statistically significant.²⁸ Of the remaining variables only one, the artist's death, approaches statistical significance. Works acquired from younger artists do not earn significantly higher returns (to compensate for added risk). Works acquired at different time periods earn comparable returns as do prints and unique works. Overall, the regression analysis supports the hypothesis that skill played an important role in the Ganzes financial success since with few exceptions the Ganzes earned similar returns across different artists, time periods and types of work.²⁹

²⁷ I excluded a work by John Tweedle because I was unable to obtain biographical information.

²⁸ The F-value is 1.78 with 4 and 70 degrees of freedom while the critical value is 2.50 at the .05 significance level.

²⁹ I also reestimated the regression in Table 6 adding a dummy variable for works sold at the "Ganz only" auction on November 10, 1997. Recall that Ganzes sold works at four other auctions at Christie's in November 1997. The coefficient on the "Ganz only" variable (which covers 53 of the 83 works in the sample) is positive and highly significant (t-ratio = 4.21). The return on works sold at the "Ganz only" auction was on average nearly .08 higher than Ganz works sold at other auctions in 1997. This result is not surprising. Christie's selected the best, highest priced and most sought after works for the "Ganz only" auction, some of which cost the Ganzes very little, and concentrated its promotion efforts on these works. I add three further points.

(1) In the regression including the "Ganz only" auction variable, the 1986 and 1988 auctions still yield the highest returns. The coefficient (and t-statistic) for the 1986/1988 auctions is .130 (5.06).

(2) The R^2 increases from .30 to .44 and the PRICE and DEATH variables are both significant (t- statistics of 2.18 and 2.60 respectively) when the "Ganz

III. PRICE PREMIUMS FOR GANZ WORKS

There are several reasons why buyers might be willing to pay a so-called “celebrity” or price premium for works from the Ganz collection. A buyer might gain prestige or status from owning one of their works; a “Ganz” work might provide a buyer with greater assurance that the work is of truly high quality in a market where information is often difficult to come by;³⁰ and finally a buyer might receive utility per se (independent of others knowing he owns the work) from the close association of the work with its prior owner. The latter is similar to the substantial premiums paid for objects owned by Jackie Kennedy Onassis or Princess Diana.

Notwithstanding the high prices paid for many of the works in the Ganz collection, one remains somewhat skeptical that these works would command a significant celebrity premium. To be sure, the Ganzes’ were well known in the art world before the auction. But there is no reason to believe that their name or association with the paintings would add value to them. In addition, many of the artists they collected were recognized masters in 1997 so that the Ganzes name (as opposed to the artist’s name and the work itself) would not provide additional assurance of quality.

I test for a price premium in two ways. First, I examine the relationship between prices and presale estimates for Ganz works

only” auction is added to the regression. The date acquired and artist variables are statistically insignificant both individually and jointly.

(3) For the purpose of distinguishing between skill and luck alone, however, one should exclude the “Ganz only” variable in the regression. At the time the Ganzes acquired works they had no way of knowing which works would be included in the “Ganz only” auction. By including this variable, one tends to eliminate some of the variation in returns I associate with luck—i.e., variation associated with particular artists, dates of acquisition and type of work. Thus, a regression that included the “Ganz only” variable would tend to reduce the statistical significance of these other variables and bias upward the relative importance of skill compared to luck.

³⁰ Related to the quality argument is a possible reduction in risk and hence a willingness to pay a higher price for works from the Ganz collection. One could imagine that a “Ganz” work (even a work by Picasso or Johns) reduces the risk that sometime in the future the work will be deemed to be of inferior quality.

and works sold at Christie's Contemporary auction in November 1997. Under certain conditions, a celebrity price premium would lead to an increase in the ratio of the auction price to the presale estimate of a work. Second, I compare the prices of prints in the Ganz collection to the prices of "identical" prints sold at auction in the 1987 to 1996 period. Other things the same, a celebrity premium implies that prints in the Ganz collection would sell at higher prices.

A. The Ratio of Prices to Presale Estimates

Consider first the relationship between the auction price of a work and its presale estimate.³¹ Suppose buyers are willing to pay a price premium for works in the Ganz collection. As a first approximation, this premium would not affect the ratio of the auction price to the presale estimate (call this ratio "R") since information about the seller's celebrity status would be known beforehand and incorporated into the presale estimates. This would be true even if the auction house had greater difficulty estimating the impact on price of the owner's celebrity status than other aspects of the work (e.g., medium, size, exhibition and publication history, authenticity and so forth). Celebrity premiums are probably highly idiosyncratic, and prior sales of similar works or works owned by other celebrities may not provide much guidance. But poor information or lack of expertise does not mean that presale estimates would systematically understate actual sale prices. Rather, these estimates would contain both large positive and negative errors but would still be unbiased

Negative bias or, in this case, a higher R for works from the Ganz collection than works owned by non-celebrities would require that Christie's discount the Ganzes' "celebrity" status in preparing presale estimates. Why this should be so is unclear, yet there is considerable evidence that celebrity premiums have been greatly understated in several highly publicized auctions involving objects owned by (and closely associated with) Jackie Kennedy Onassis,

³¹ Although auction houses typically publish high and low estimates for each work, we simplify the discussion by just referring to a single or average estimate.

Princess Diana and Rudolph Nuryev.³² Although the celebrity status of these individuals far exceed that of the Ganzes, the point remains: presale estimates of works owned by celebrities may systematically understate final prices.

Table 7 summarizes the data on presale estimates and prices for works from the Ganz collection and from Christie's Contemporary Art auction also held in November 1997.³³ I use the Contemporary auction as a benchmark since it both excludes celebrity premiums and controls for the overall economic state of the art market. The results strongly support a price premium for works from the Ganz collection that was not incorporated into the presale estimates. Nearly 60 percent of the 118 works sold for more than their high estimate while 18 percent sold for less than their low estimate or did not sell at all. In contrast, only 24 percent of works at Christie's Contemporary Auction sold for more than their high estimates while nearly 50 percent sold for less than their low estimates or did not sell. These differences are statistically significant. A chi-square test rejects the hypothesis (at the .01 significance level) that the distributions across the four categories in Table 7 are the same for works in the Ganz collection and the Contemporary Auction. Similarly, we reject the hypotheses (at the .01 level) that the distributions are the same for the Contemporary and "Ganz only"

³² For example, the Jackie Kennedy sale netted nearly \$35 million compared to a presale estimate of about \$4.6 million. Similarly, the sale of 79 Princess Diana gowns prior to her death yielded \$5.7 million or over \$72 thousand per gown, which greatly exceeded the presale, estimates. And, more generally, there is some evidence that presale estimates of auction prices for silver lots at Christie's and Sotheby's are significantly biased (though the bias is small). See Bauwens, L. And Ginsburgh, V., (1994) "Do Art Experts Make Rational Estimates of Pre-Sale Prices?" CORE Discussion Paper No. 9438.

³³ Christie's Contemporary Art Auction was held on two days: Part I on November 18th and Part II on November 19th. Although 16 works from the Ganz collection were auctioned in Part II of the Contemporary Auction, they are counted as "Ganz" works and, therefore, are not part of the Contemporary Art Auction sample.

auctions and the Contemporary and “other Ganz” auctions shown in Table 7.³⁴

Notice that the price premium appears substantially greater for works sold at the “Ganz only” auction—69 percent of “Ganz only” works compared to 50 percent of other Ganz works sold for more than their high estimate. This suggests that the so-called “celebrity premium” was positively related to Christie’s promotion activities which were largely concentrated on the “Ganz only” auction. Yet, a chi-square test indicates no significant difference between the two Ganz auctions—i.e., one cannot reject the hypothesis that the two Ganz auctions have identical price distributions in Table 7.³⁵

Auction	No. Works	Unsold (%)	$P < E^l$ (%)	$E^l _ P _ E^h$ (%)	$P > E^h$ (%)
1997 Ganz	118	4 (3.4)	17 (14.4)	27 (22.9)	70 (59.3)
<i>Ganz Only</i>	58	1 (1.7)	6 (10.3)	11 (19.0)	40 (69.0)
<i>Other</i>	60	3 (5.0)	11 (18.3)	16 (27.7)	30 (50.0)
1997 Cont. Art	320	72 (22.5)	83 (25.9)	88 (27.5)	77 (24.1)

B. *The Prices of Prints*

As another test of the celebrity premium hypothesis, I use regression analysis to compare the prices of prints from the Ganz collection with identical prints auctioned in the 1987 to 1996 time period. A celebrity premium implies a higher price for a Ganz print than an otherwise “identical” print.³⁶ The regression analysis

³⁴ The chi-square values are as follows: 55.8 for Ganz works and works auctioned at the Contemporary Auction; 48.6 for “Ganz only” and the Contemporary Auction; and 21.1 for “other Ganz works and the Contemporary Auction. The critical chi-square statistic at the .01 level is 11.34 at the .01 level of significance (i.e., a chi-square value greater than 11.34 is significant at the .01 level).

³⁵ The chi-square statistic is 4.79 while the critical value is 6.251 at the .10 level of significance with 3 degrees of freedom.

³⁶ I say “identical” because price will also depend on factors such as the condition of the work and whether the work was printed posthumously. In addition, price

contains 43 different prints (or print titles) from the Ganz collection (11 that were sold at the “Ganz only” auction and 32 that were sold at Christie’s print auction) plus 100 prints that match one of the 43 Ganz prints.³⁷

The dependent variable is the (log) price of each print. The independent variables are as follows: dummy variables for each of the 43 print titles (which pick up characteristics of each print such as its dimensions, the size of the edition, the identity of the artist and the date of execution); a dummy variable for prints sold at the “Ganz only” auction and another dummy variable for Ganz prints sold at Christie’s print auction; a dummy variable for an artist’s (or printer’s) proof; and a dummy variable for prints sold at Christie’s or Sotheby’s. In addition, I also include the (log) Daily Telegraph Art 100 index as a separate independent variable in order to account for price changes in the art market during the 1987-1997 period.³⁸

Table 8 indicates that there is a significant price premium for Ganz prints especially for prints sold at the “Ganz only” auction. Other things constant, prints at the “Ganz only” auction commanded price premiums of more than 90 percent compared to “identical” prints auctioned elsewhere.³⁹ Smaller (around 25 percent) but still significant price premiums also exist for other Ganz prints. Moreover, the difference between the regression coefficients on the two Ganz variables is statistically significant at the .05 level. We also

may also depend on the print number and whether the work is an artist or printer proof (lower numbers and proofs are often believed to command higher prices).

³⁷ The sample includes a print from the Ganz collection only if at least one other identical print was auctioned during the 1987 to 1996 period. This restriction eliminates nine prints from the Ganz collection that were sold during the 1997 auction. The price data on the prints that matched one of the 43 Ganz prints are from Mayer International Auction Records for 1987-1996, available on CD-ROM.

³⁸ I set the value of the Art Index in November 1997 equal to 1 ($4522 = 1$) and used the value of the index (relative to November 1997) in June of each year.

³⁹ To estimate the percentage price difference (r) from the regression coefficient (b) on a dummy variable, we calculate $r = e^b - 1$. When $b < .10$, r and b are about the same but as b increases the difference between r and b increases. Thus, the coefficient .649 on the Ganz only variable in Table 8 implies a 91 percentage increase (or a .91 increase).

find that prints at Sotheby's and Christie's sold for significantly higher prices (around 37 percent) than "identical" prints at other auction houses. Possibly, Sotheby's and Christie's attract better

<i>Variable</i>	<i>Regression Coefficients</i>	<i>(t-statistics)</i>
Ganz only	.649	(3.49)
Other Ganz	.222	(1.95)
C or S	.315	(2.13)
Proof	-.388	(2.00)
Ln Art100	.788	(4.62)
Constant	8.69	(24.7)
R ²	.79	
<i>Observations</i>	143	
<i>Note:</i> The regression includes dummy variables for the 43 different print titles.		

quality versions of "identical" works (e.g., prints with lower print numbers, prints in better condition and prints with a more important provenance) or are able to attract a larger number of potential bidders. Both factors would tend to yield higher prices.⁴⁰ Surprisingly, proofs tend to sell at lower prices. One might expect the opposite since (at least) for artist's proofs the artist would be more closely associated with the print since he has had a greater involvement with the printing process.⁴¹ Finally, print prices in our sample are positively and significantly related to overall movements

⁴⁰ I also tested the hypothesis that lower print numbers are associated with higher prices using a subsample of 119 prints. (I excluded 24 prints from the sample of 143 because I have no information on their print number). Reestimating the regression in Table 8 for the 119 prints yields a positive and barely significant coefficient (.007 and a t-value of 1.89) on the number variable. This suggests that higher numbers are associated with slightly higher not lower prices.

⁴¹ I also separated the proof variable into separate artist and printer proof variables. Again both variables had negative signs (indicating lower prices) although the artist proof variable was statistically insignificant.

in art prices in the 1987 to 1997 period. Moreover, we cannot reject the null hypothesis that a given percentage change in the Art 100 Index is associated with an equal percentage change in the prices of prints in our sample (i.e., we cannot reject the hypothesis that regression coefficient on the Art 100 Index equals 1).

IV. CONCLUDING REMARKS

As the title “Winning the Art Lottery” implies the Ganzes turned a modest investment in art over a 50-year period into a collection worth more than \$250 million. Yet the term “lottery” doesn’t quite capture the journey they traveled or the way they succeeded. They didn’t hit the jackpot overnight. Rather they spent a good deal of time and effort searching and acquiring art over many years. And like long-term investors in general, they had enough confidence in their purchases that they followed a “buy and hold” strategy. Occasionally they exchanged works for other works but they rarely sold art. They held only three of the 83 sampled works auctioned in 1986, 1988 and 1997 for less than 10 years. They held seventy-three for more than 20 years.

The term “lottery” might suggest luck alone. But the empirical evidence shows that they were not only lucky but skillful as well. Their financial success did not result from a few lucky purchases. On the contrary, they earned double digit real annual returns on more than half the works they sold. Moreover, they earned consistently high returns, regularly beating the stock market on works by different artists acquired over different time periods.

I also found that buyers were willing to pay a price premium for works from the Ganz collection. Whether this resulted from Christie’s extensive promotion of the Ganz collection prior to the auction or a kind of celebrity premium attached to their works or a combination of the two, I cannot tell. Buyers paid somewhere between 25 and 90 percent more for prints from the Ganz collection than for otherwise identical prints. And more than half the works from the Ganz collection sold at prices higher than the high estimates compared to only 25 percent for other closely related works.

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