

# China Household Appliances

OUTPERFORM  
(maintain)

## *Special report: China's intelligent home appliance companies: from learners to global leaders*

TFI Asset Management Limited would like to acknowledge the contribution and support provided by **Sun Qian (孙谦)**, employee of Tianfeng Securities Co., Ltd.

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# Summary

China's home appliance industry has come a long way in the past decade. In terms of sales volumes, core domestic home appliance products have won mainstream acceptance to fulfill functional consumer demand. In terms of brands, premium products constantly emerge and perform well. In the global market, home appliance companies have evolved from being learners to leaders. We see a strong momentum toward global expansion for domestic home appliances. Major categories rank high on Amazon's sales lists. However, as growth rates of the domestic home appliance market gradually slow down, we expect to see quality improvements rather than volume growth. We believe the drivers of demand are: **1)** personal consumption levels have increased as consumers increasingly pursue quality of life; **2)** people increasingly require the assistance of intelligent products as time for housework decreases; and **3)** demographic changes: home appliance safety and convenience have become necessary with elderly and children often left at home while breadwinners go out to work.

## Smart home devices set for a boom

Smart homes require the intelligentization of the entire residence. China's smart home device market size was RMB435.4bn in 2020, a CAGR of 20% over the past four years. We expect market scale will exceed RMB800bn in 2050E, and smart home appliances account for the largest share of the mix at RMB282.2bn. In 2020, the smart home market witnessed the functionality of different device scenarios, mainly due to improvements in comparability, AIOT, wireless communication technology and reduced costs. The after-market, open-source ecosystem cooperation and technology empowerment models are key focus areas for future development.

## The next decade: IOT launches a new era in smart home appliances

We see two major directions that the smart home market could grow: **1)** one-time price increases based on product intelligence; and **2)** combining low-frequency home appliances with high-frequency peripheral ones via supply chain collaborations.

## Our view

Smart home appliance trends are one of the key ones to watch, as it moves from sales volume growth to quality improvements. We are optimistic about smart home appliance development for the long term. We believe that catalysts such as software and hardware upgrades, cost reductions and strong demand will drive smart home appliance growth. Rising prices of home appliances and supply chain synergy would ensure the passage of this new era for the home appliance industry.

**Risks include:** Consumer demand falling below expectations; IOT developments falling below expectations; high volatility in raw material prices; and smart home appliance developments falling below expectations.



1. 过去十年：深耕中国，走向世界
2. 智能家居：风起青萍，蓄势待发
3. 未来十年：万物互联，开启智能家居新篇章



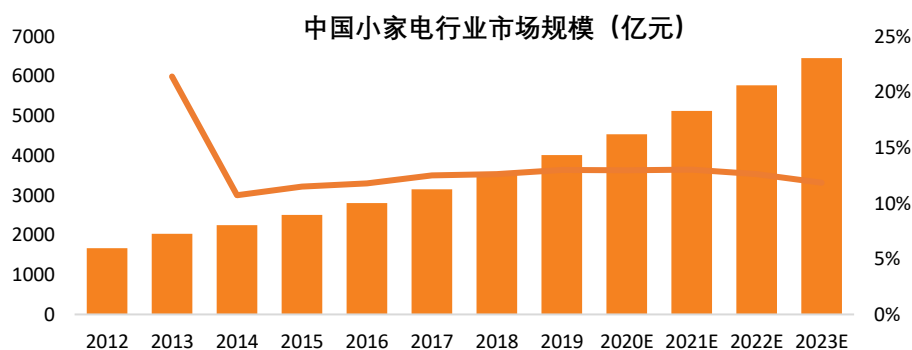
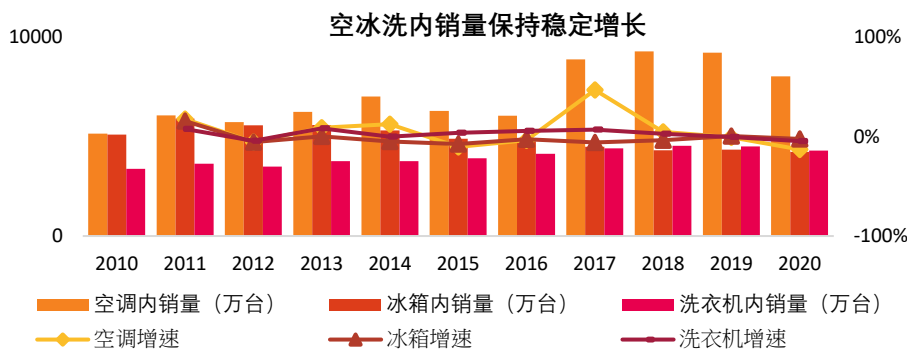
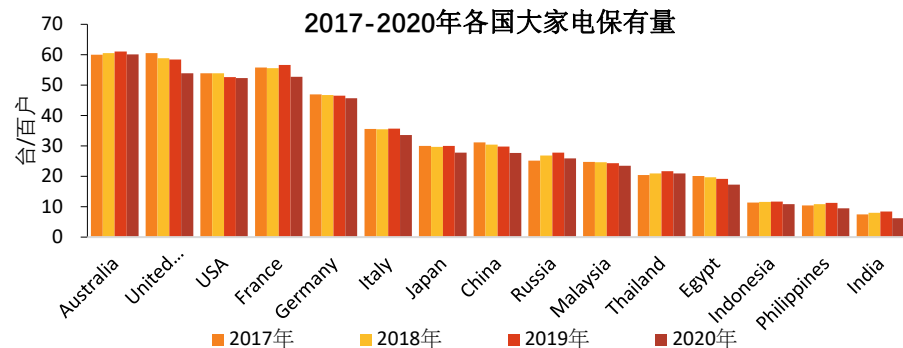
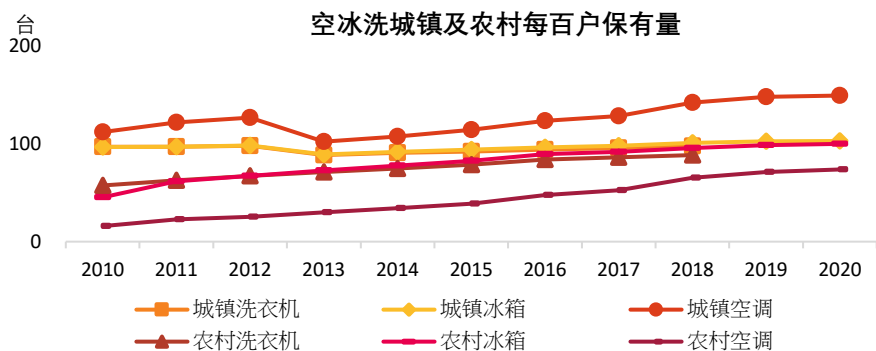


# 1. 过去十年：深耕中国，走向世界



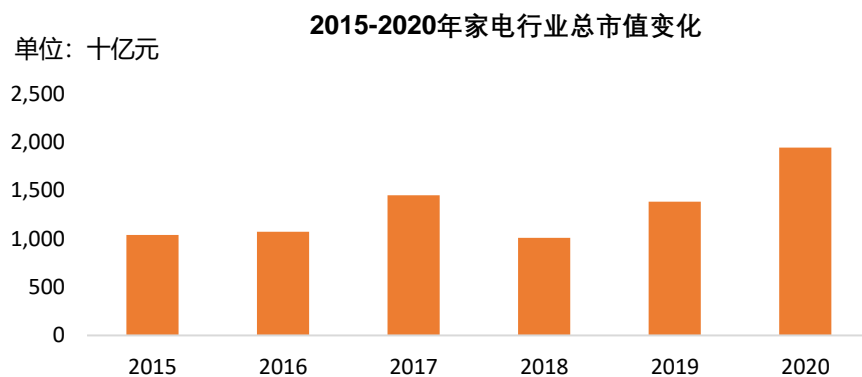
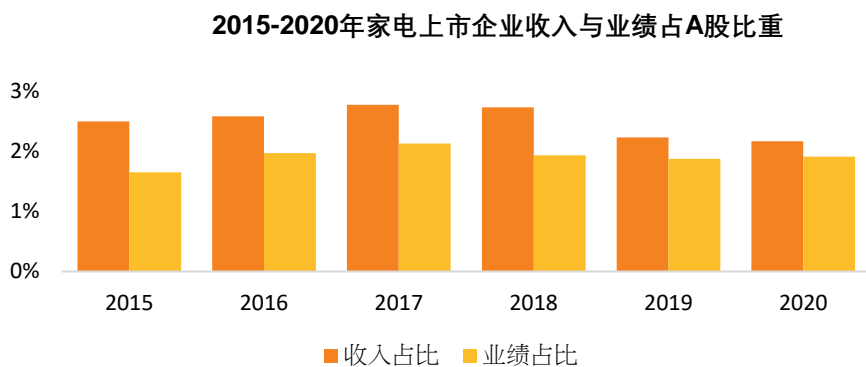
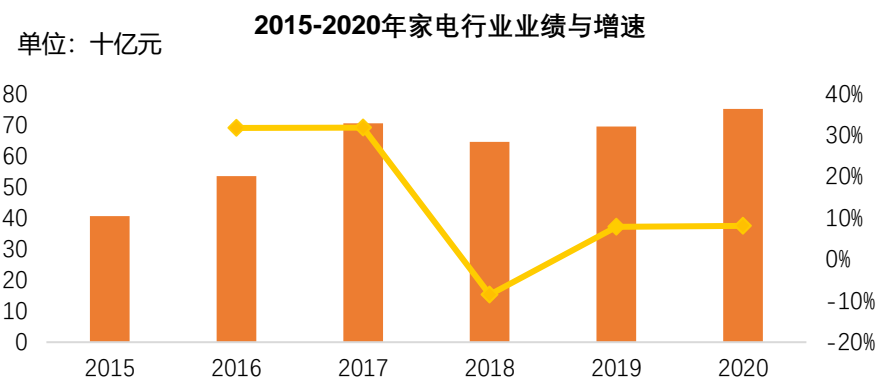
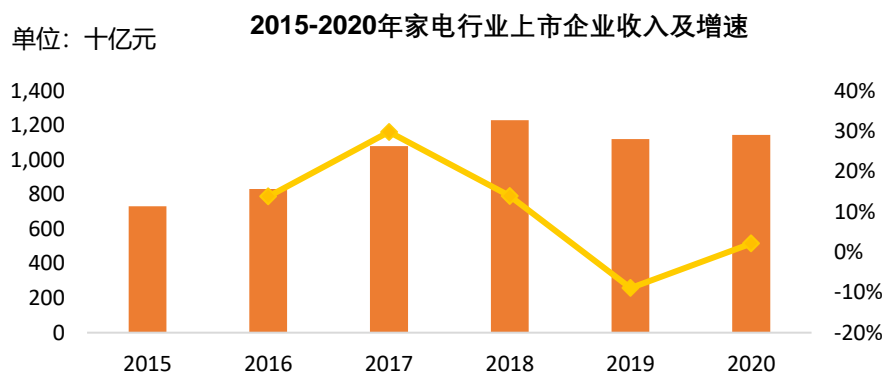
# 过去十年中国家电行业取得了丰硕的成果

- 我国主要家电普及已基本完成，消费者的基础功能需求得到满足。国家统计局数据显示，2020年城镇冰箱及空调百户保有量均超百台；根据欧睿国际数据显示，我国大家电保有量已与部分发达国家处于类似水平。
- 大家电市场销量增长中枢逐渐下移。产业在线数据显示，空冰洗10-15年的CAGR分别为4.1%、-0.9%、2.9%，16-20年的CAGR分别为7.3%、-2.9%、1.0%；小家电市场在品类持续扩充的带动下，仍保持相对较快增长。



# 优秀的家电企业不断涌现

- 截止当前，申万一级家用电器板块中，已有上市家电企业共76家，其中品牌企业52家，产业链公司24家。申万共有28个一级行业，按市值、收入、业绩排名，家电行业分别位列16、17、14名（20年12月31日），过去10年家电行业的收入及业绩基本保持在前50%分位。



资料来源：Wind，天风证券研究所



# 国内不断涌现优秀的家电企业——三年内新上市家电公司

- 近三年来，国内不断涌现多家优秀的家电上市公司，其主营业务突出，营收及业绩表现较好，均保持较快增长。



代码	公司	主营业务	20营收（亿元）	近三年CAGR	20业绩（亿元）	近三年CAGR
603486.SH	科沃斯	家庭服务机器人/清洁类小家电	72.34	16.70%	6.10	19.46%
300894.SZ	火星人	集成灶为核心的厨具	16.14	32.11%	2.75	19.05%
688169.SH	石头科技	智能清洁机器人及其他清洁电器	45.30	59.38%	13.69	173.39%
603195.SH	公牛集团	插座/开关数码配件等民用电工	100.51	11.56%	23.13	21.64%
002959.SZ	小熊电器	互联网+创意小家电	36.60	30.50%	4.28	42.79%
300911.SZ	亿田智能	集成灶等现代新型厨房电器产品	7.16	14.34%	1.44	42.28%
605336.SH	帅丰电器	以集成灶为核心的现代新型厨房电器	7.14	8.11%	1.94	13.17%
603657.SH	春光科技	专业研发和生产清洁电器软管组件系列产品	8.54	23.17%	1.42	17.29%
605117.SH	德业股份	冷凝器等部件以及除湿机等环境电器产品	30.24	26.16%	3.82	60.15%
300824.SZ	北鼎股份	多士炉，电子水壶，电蒸锅以及电烤炉等	7.01	9.77%	1.00	34.61%

资料来源：公司官网，wind，天风证券研究所



# 国内不断涌现优秀的家电企业——初创公司



资料来源：欧瑞博官网，云起官网，天眼查，天风证券研究所

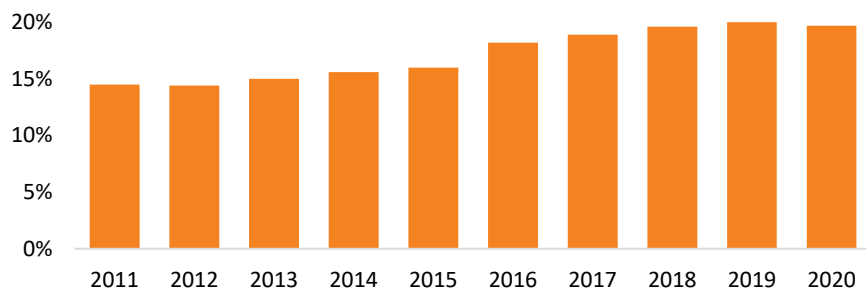




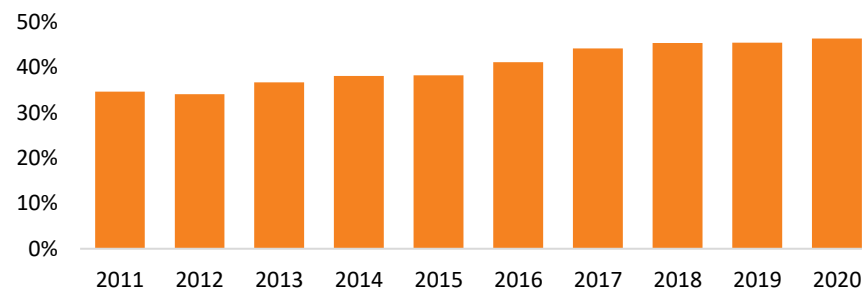
# 从全球来看，中国家电企业逐步从学习走向引领

- 根据欧睿国际数据，国产家电出海势头强劲，2020年在全球家电市场销量份额和制造量份额分别为20%、46%；各品牌主要家电品类在亚马逊销量排名靠前。

中国家电企业在全全球家电市场的市场份额



中国家电企业在全全球家电市场的制造份

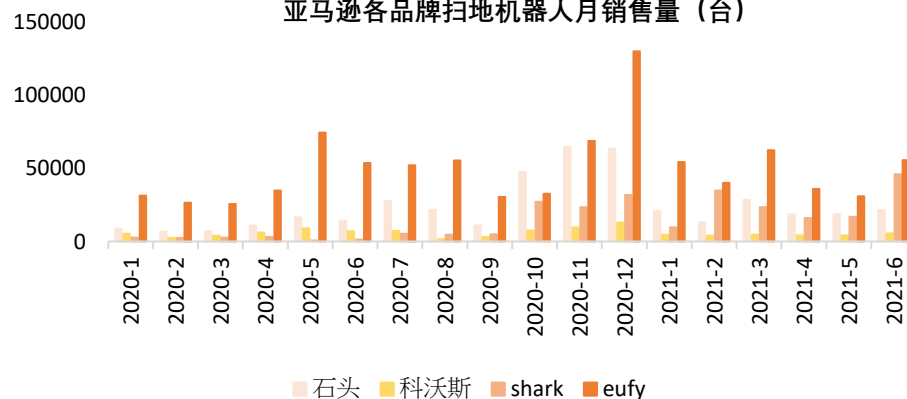


多款中国小家电产品位列美国亚马逊21年6月销售排行榜TOP10

品类	排行	品牌	型号	6月销量	产品图片
空气炸锅	1	cosori	COSORI Air Fryer Max XL(100 Recipes) 5.8 QT, Black	25820	
	4	cosori	CP137-AF Air Fryer 3.7 QT, Digital-Black	12483	
	10	cosori	12-in-1 Large XL Air Fryer Oven 5.8QT, Black	5325	
净化器	1	LEVOIT	LEVOIT Air Purifier Core 300, Black	30972	
	3	LEVOIT	LEVOIT Air Purifier for Home Bedroom, White	-	
	8	LEVOIT	LEVOIT Air Purifier for Home Large Room, Vital 100 Grey	5970	
浴室秤	1	Etekcit	Digital Body Weight Bathroom Scale, 440 Pounds	36569	
	3	Etekcit	Digital Body Weight Bathroom Scale with Step-On Technology	21381	
	4	Etekcit	Bathroom Digital Weight Scale, Smart Bluetooth Scale for BMI	7456	
窗式空调机	2	Midea	U Inverter Window Air Conditioner 8,000BTU,Smart Control	12953	
	3	Midea	MIDEA 5,000 BTU EasyCool Window Air Conditioner	-	

资料来源：欧睿国际，jungle scout，美国亚马逊，天风证券研究所

亚马逊各品牌扫地机器人月销售量（台）

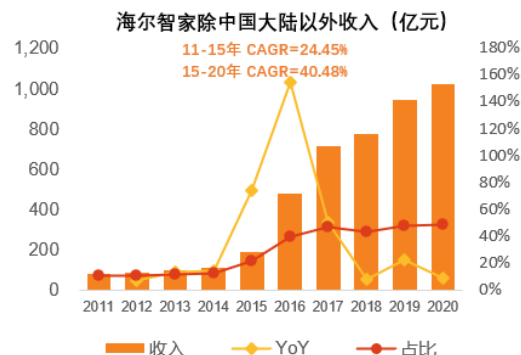


注：本图统计了各品牌2020年1月-2021年6月在亚马逊上售卖的主流扫地机器人机型及配件的销售数据

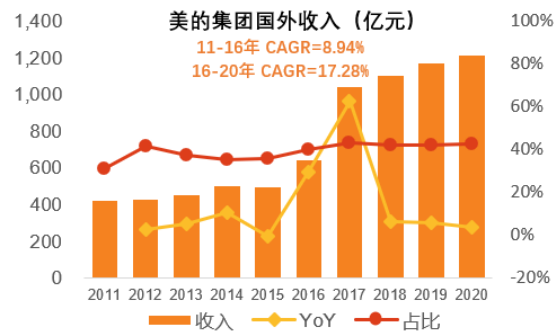
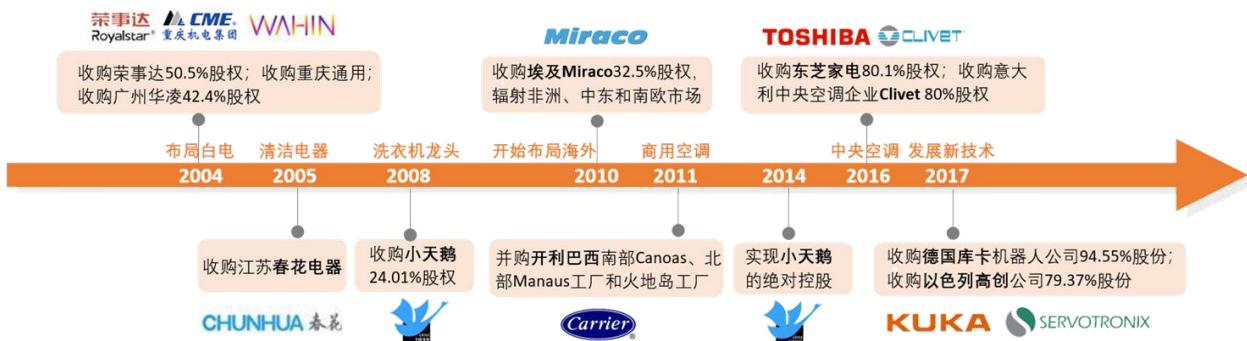


# 从全球来看，中国家电企业逐步从学习走向引领——大家电出海

- 海尔：2011年起先后收购三洋电机/新西兰斐雪派克/美国GEA/意大利Candy等企业，16年境外营收高速增长，海外营收占比持续攀升。



- 美的：初期国内并购实现产业链布局，2010年起并购发展的重心转到海外，17年海外收入大幅增长，海外营收占比稳中有升。



资料来源：海尔官网，海尔年报，美的官网，南方日报，Wind，天风证券研究所



# 从全球来看，中国家电企业逐步从学习走向引领——小家电出海

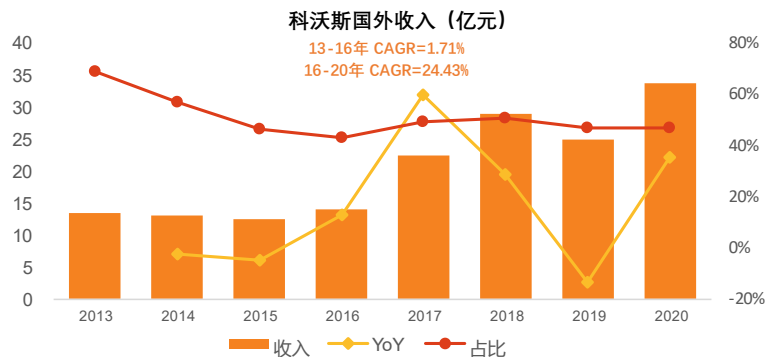
## 石头科技：自有品牌发展迅猛，扫地机出海表现靓丽



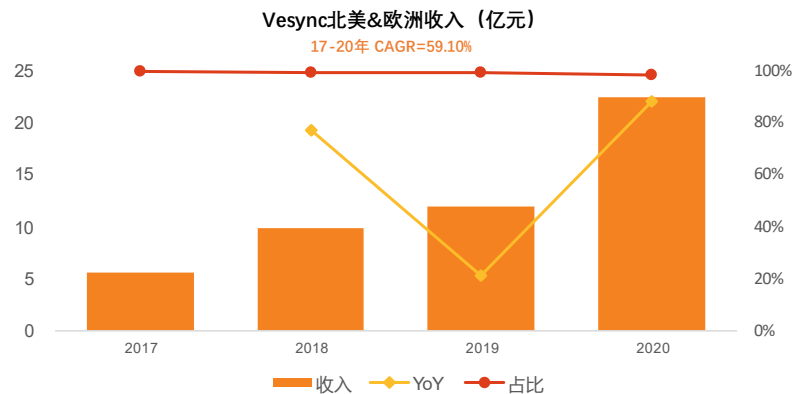
## JS环球生活：依托国内产业链、技术和渠道优势，跨国协同效应强劲



## 科沃斯：专注海外电商渠道，科沃斯+添可双轮驱动高增长



## Vesync：海外需求洞察+中国本土制造，构筑跨境小家电护城河

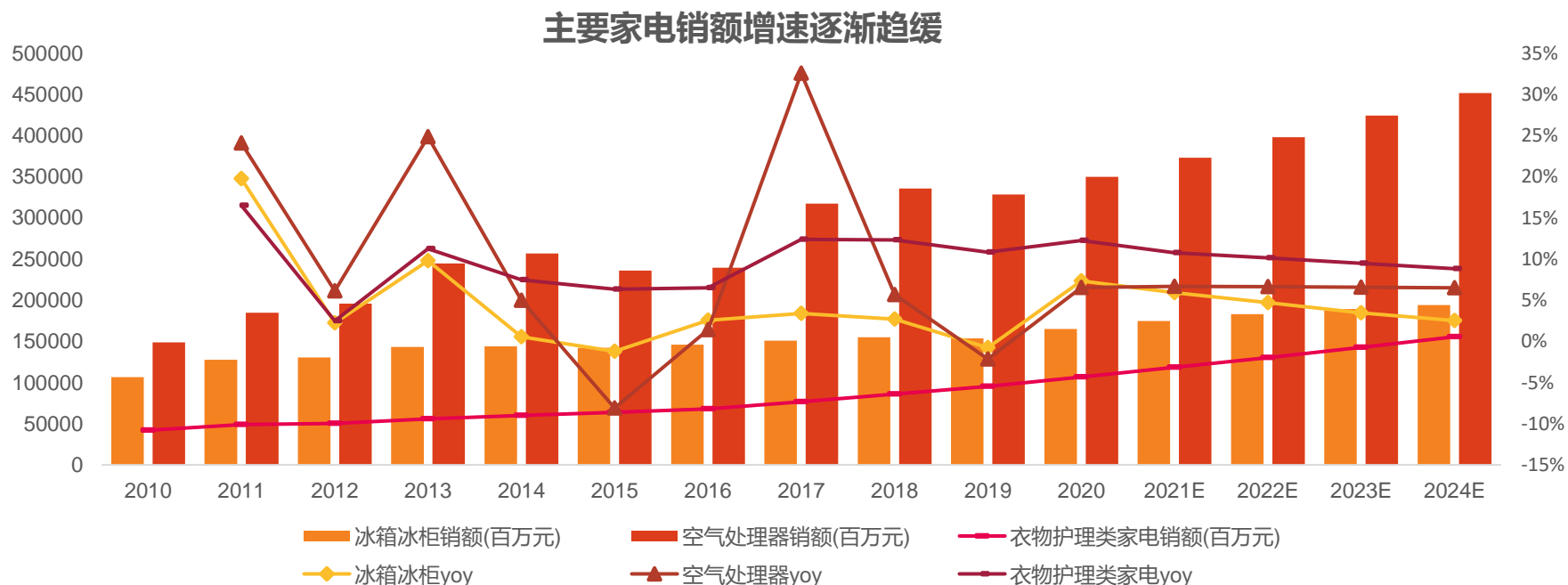


资料来源：Wind，公司年报，天风证券研究所



## 下一阶段，家电行业需从量增转向质增

- 根据欧睿国际数据显示，我国主要家电的市场增长速度将逐渐放缓，2021-2024年冰箱冰柜、空气处理器、衣物护理类家电产品销额的CAGR分别为3.56%、6.58%、9.49%，低于2010-2020年该三大品类的CAGR（分别为4.47%、8.92%、9.77%），未来必然要由量增转向质增。



注：冰箱冰柜、空气处理器、衣物护理类家电分别指欧睿国际口径下的Refrigeration Appliances、Air Treatment Products、Home Laundry Appliances。Refrigeration Appliances包含冰箱、冰柜；Air Treatment Products包含空调、净化器、加湿器等；Home Laundry Appliances包含洗衣机、干衣机等。

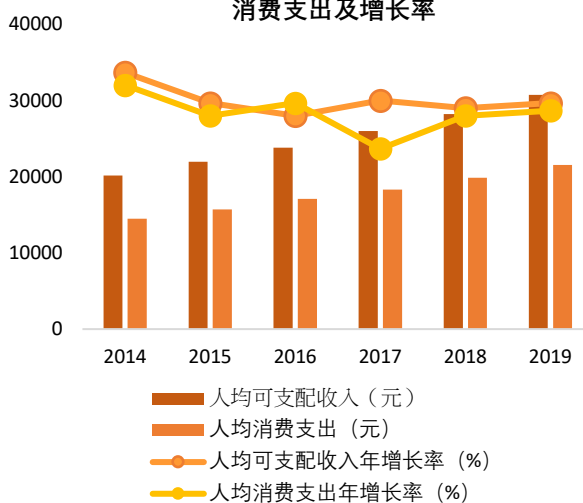
资料来源：欧睿国际，天风证券研究所



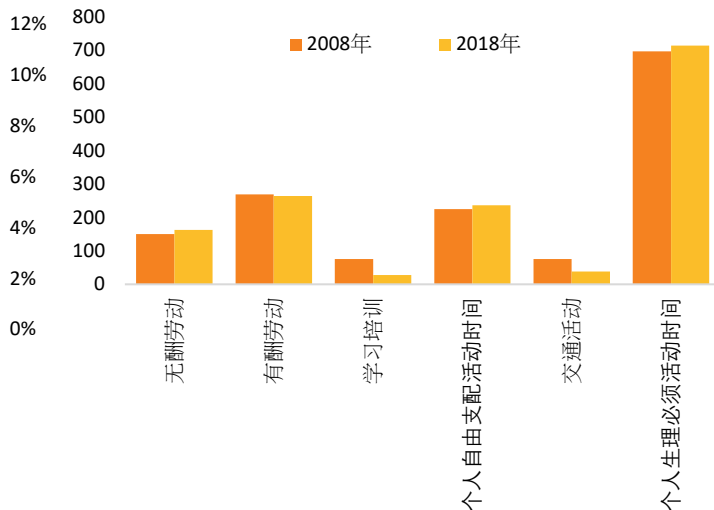
# 背后的需求驱动：居民消费水平提升+家务劳动时间压缩+人口结构转变

- 近年来，我国经济持续发展，居民消费水平不断提升，开始追求品质生活。
- 根据国家统计局数据，08-18年间，我国劳动者的工作时间不断延长而家务劳动时间不断压缩，未来个人需要在经济活动的时间和可自由支配的时间上取得平衡，家电自动化、智能化程度提升可以帮助实现这一目标。
- 随着人口老龄化问题加剧及生育政策放开，“一老一小”居家安全及便捷性问题亟待解决。

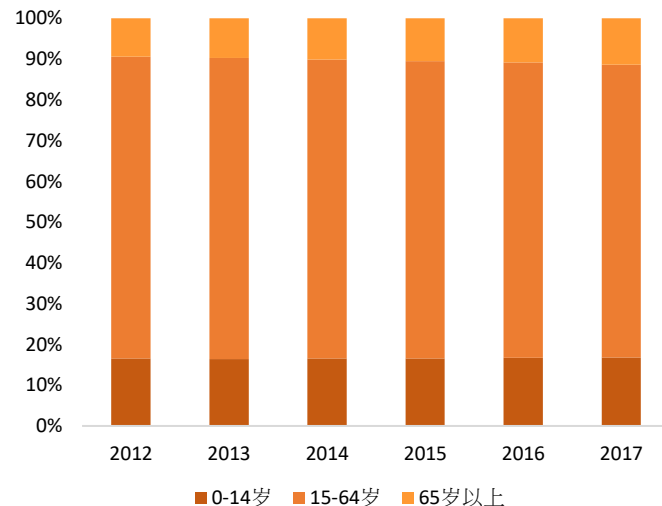
2014-2019年中国居民人均可支配收入与人均消费支出及增长率



人均家务劳动时间缩减



中国家庭儿童和老人占比超过28%



注：无酬劳动即指家务劳动

资料来源：国家统计局，奥维云网，天风证券研究所

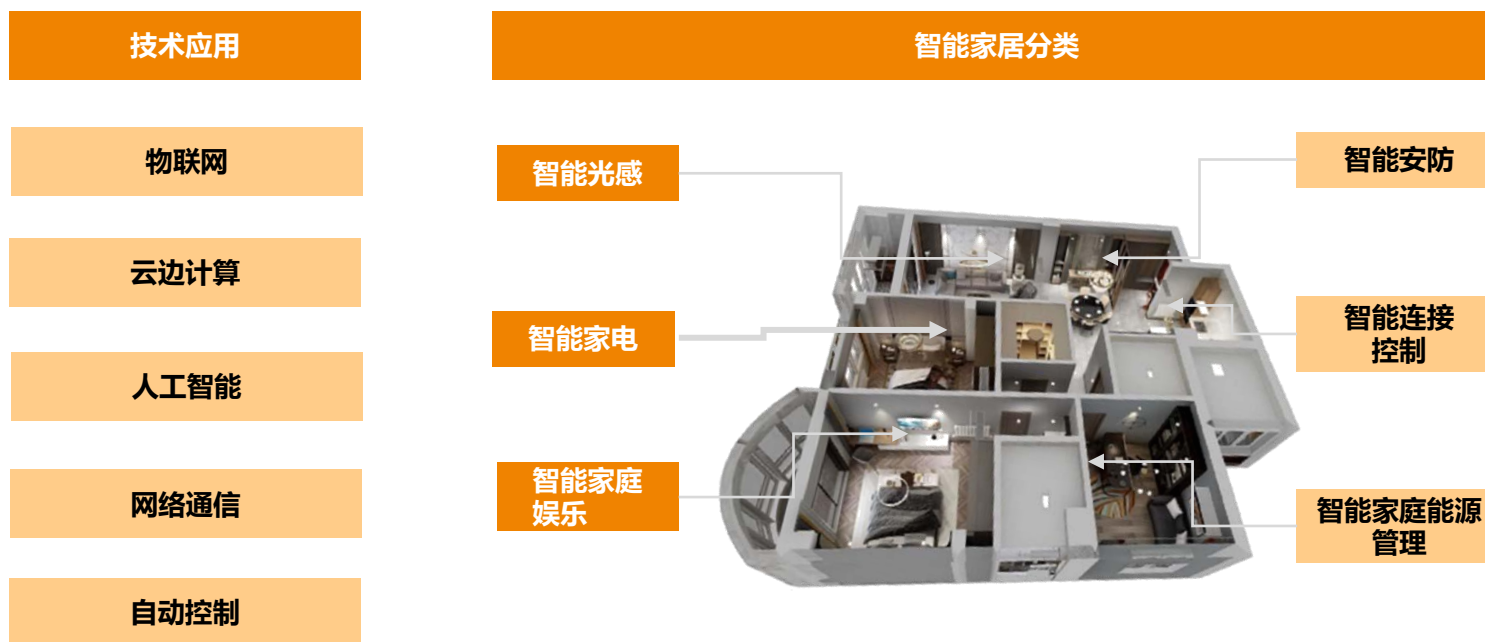


## 2. 智能家居：风起青萍，蓄势待发



# 智能家居行业定义及分类

- 智能家居即实现全屋的智能化。它以住宅为平台，将网络通信、自动控制、物联网、云计算及人工智能等技术与家居设备相融合，形成便捷、舒适、健康、安全、环保的家庭人居环境。随着各项技术应用场景渗透加快及中国国民消费结构转型升级，智能家居单品品类得以不断创新与扩张，主要包括智能家电、智能光感、智能家庭娱乐智能安防、智能连接控制、智能家庭能源管理等细分方向。

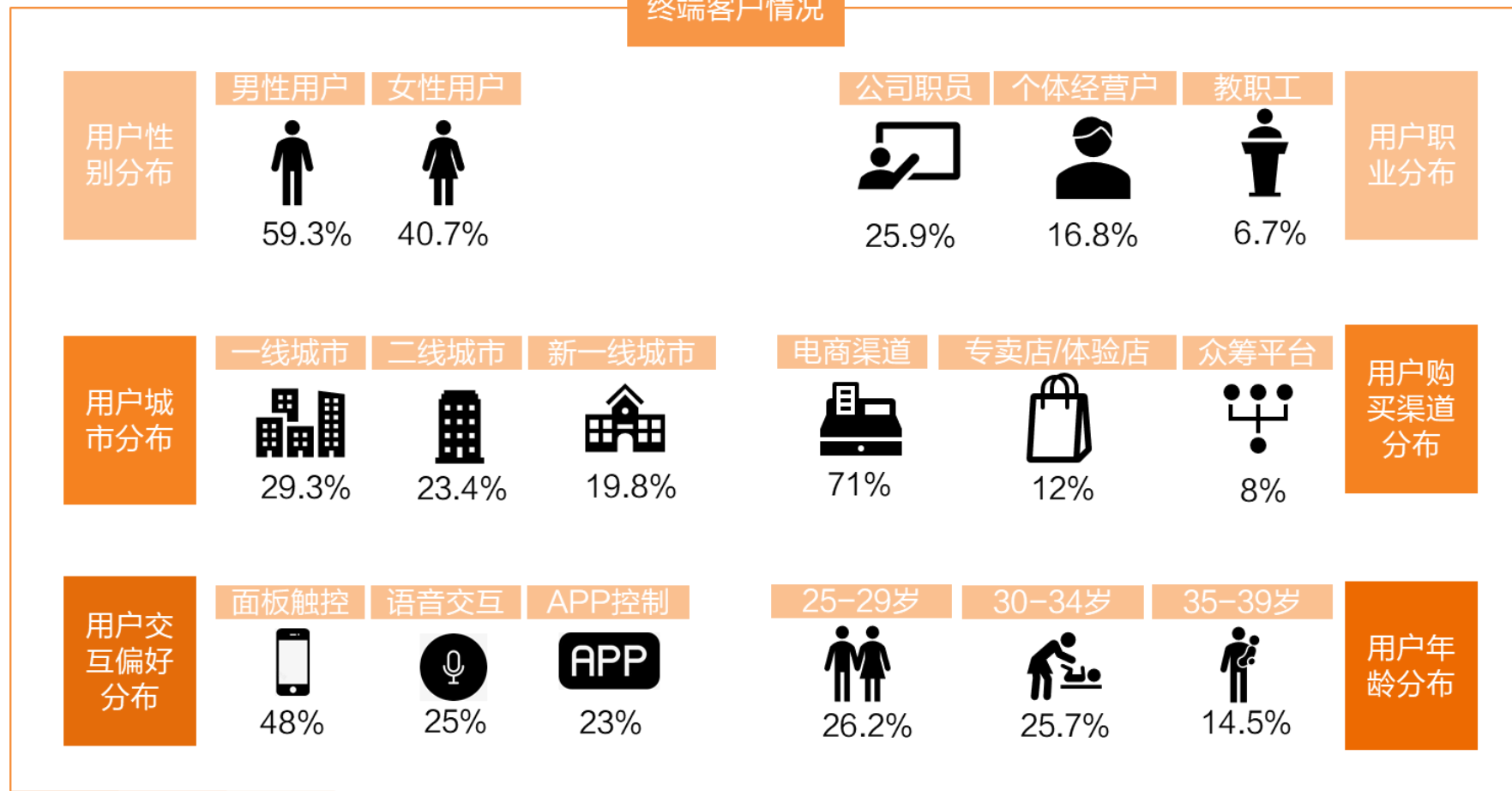


资料来源：头豹研究院，亿欧智库，天风证券研究所



# 用户画像：80、90后的一线城市男性职员为主要用户

## 终端客户情况



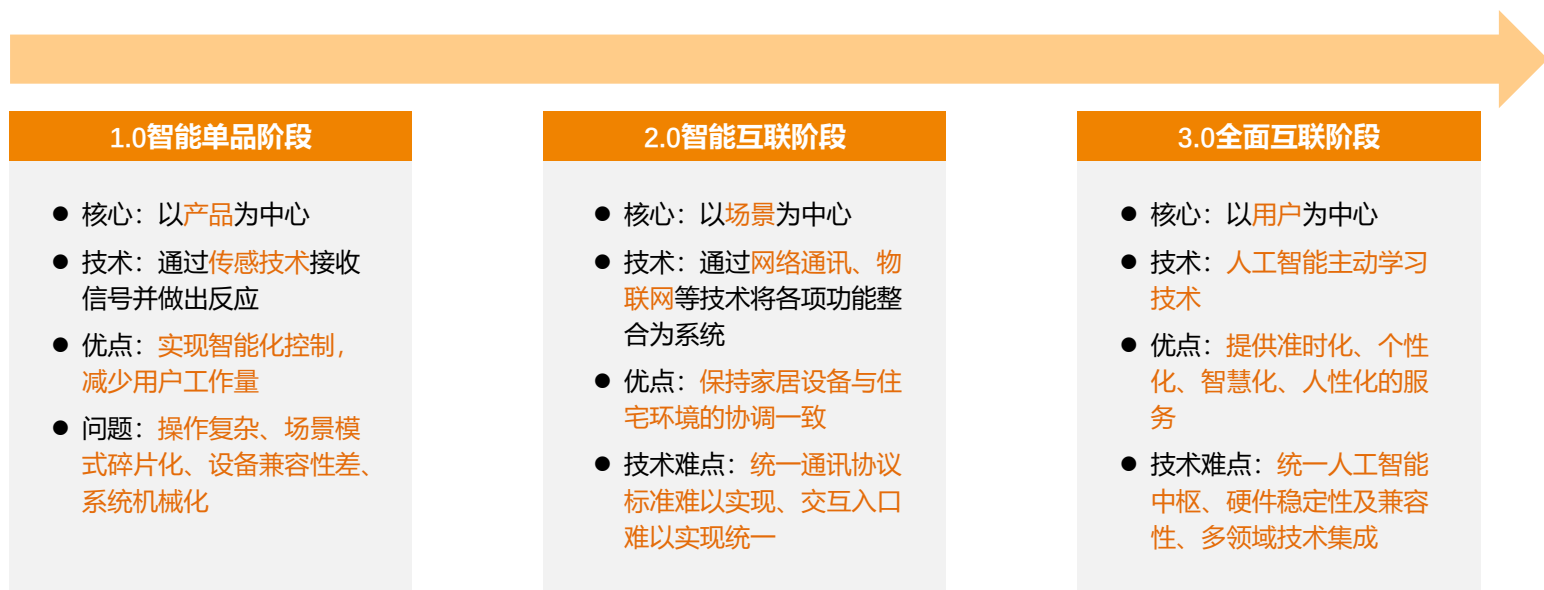
资料来源：头豹研究院，CSHIA，天风证券研究所





# 发展历程：从单品到全屋智能

- 2020年为智能家居场景化元年。智能家居行业从1.0的智能单品阶段起步，聚焦细分品类智能升级；在2.0的智能互联阶段，单品智能化程度提升为各单品间的协调合作创造了条件，物联网技术加持下家居设备与住宅环境得以形成一个整体；在3.0的全面互联阶段，人工智能、机器学习等技术帮助智能家居行业更好理解用户行为，搭建用户画像。目前，我们主要处在2.0的智能互联阶段，2020年中国智能家居市场从以产品为中心开始转向以场景为核心，未来随着物联网等技术的不断发展，有望进入全面互联阶段。



资料来源：亿欧智库，头豹研究院，天风证券研究所



# 智能家居产业链图谱

- 当前中国智能家居行业产业链已较为完整和明晰：产业链上游负责提供相关零部件及软件系统；中游主要是整体方案解决商及生产制造智能产品的硬件厂商；下游则是家装平台及直接触达消费者的线上、线下渠道。

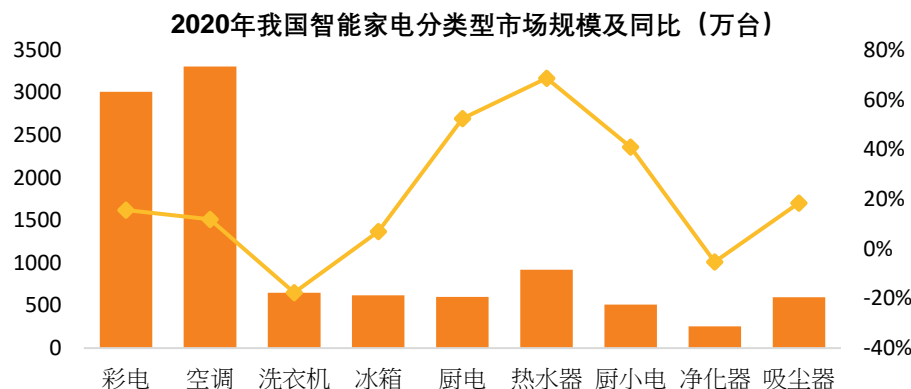
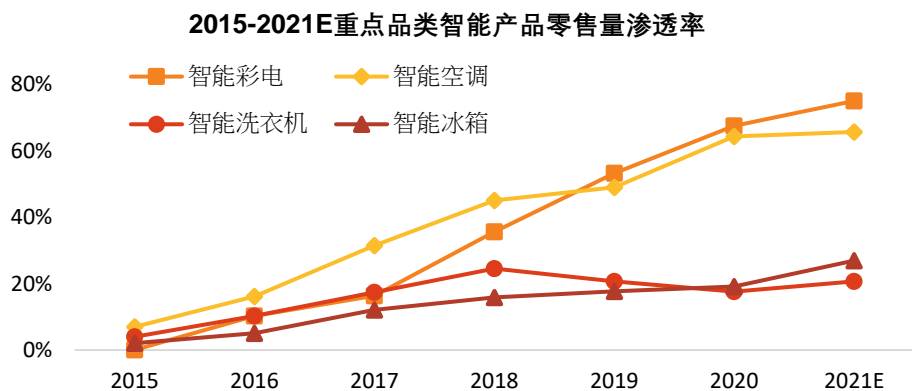
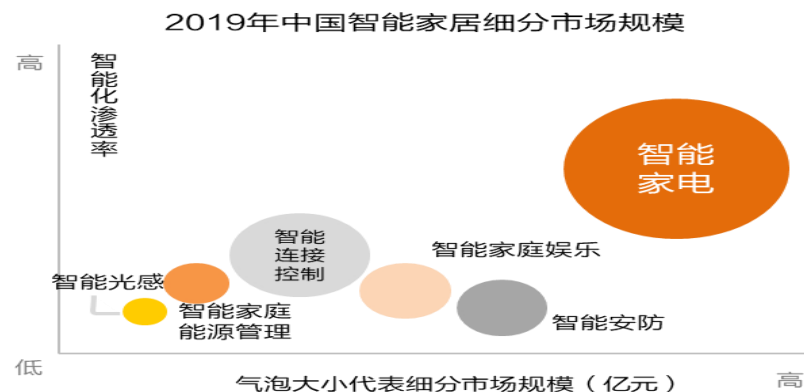
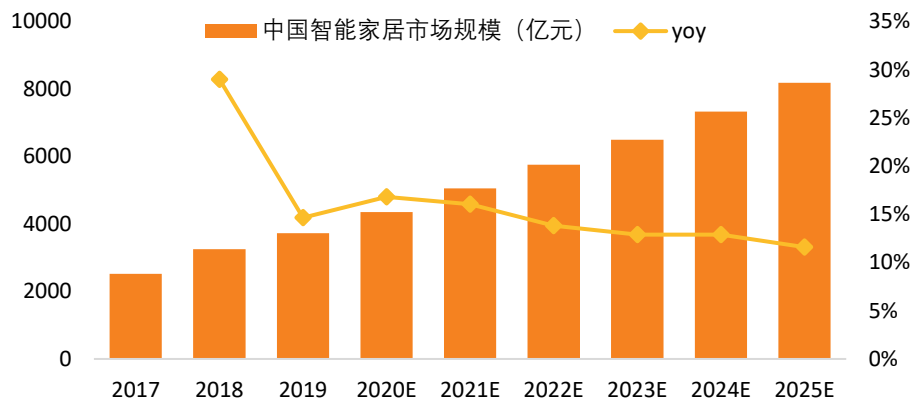


资料来源：亿欧智库，头豹研究院，天风证券研究所



# 智能家居行业规模不断增长

- 中国智能家居市场已破千亿元，过去4年的CAGR达20%。其中，家电原始市场智能化发展早且渗透率高，2019年在智能家居市场中规模最大，达2822亿元，智能家庭娱乐和智能光感市场规模分别为180亿元和99亿元。智能家电单品渗透率及规模也在不断提升，2020年智能电视与智能空调的零售量渗透率分别为68%、64%；2020年二者的零售量规模也最大，分别为3006、3303万台。



# 无论前装还是后装市场，提升产品的连接与适配性是关键

- 中国智能家居市场主要分为前装市场模式和后装市场模式。当前，**后装市场模式占据主导地位，其2019年市场规模是前装市场的135倍**，但是后装模式下智能家电不同产品、品牌间协同较差，对消费者痛点解决有限。前装市场模式虽然在初始对全屋智能化进行统一规划，但仍未很好地解决消费者后期新购置或更新家电时，与前期智能化系统的协同问题。
- 无论前装和后装，如何提升家电的可连接性和适配性是关键，当前华为提供的鸿蒙系统、天猫提出的天猫精灵智能家居系统等是未来的发展趋势。



资料来源：头豹研究院，多智时代，天风证券研究所



# 智能家居的模式划分：开源合作利于提升设备协同性，隐私保护需更加关注

- 当前，智能家电行业主要包含自有品牌、技术赋能、生态合作三大典型模式。自有品牌模式下，用户只能选择单一品牌，较为封闭，但产品功能设计更加体系化，各产品间的兼容性较好。技术赋能及生态合作都属于开源模式，其中技术赋能强调的是智能家居的基础设施（如传感器、总线等）及基于其上的软件服务；生态合作模式强调自主选择及互联互通，不同品牌产品的连接性更好。

## 自有品牌模式

- 定义：传统家电厂商掌舵，通过自建云平台，打造全屋自有品牌产品的智能化；
- 优势：全屋使用同一品牌产品，各产品间的兼容性较好
- 劣势：锁死用户选择，限定用户品牌选择余地，自身忠诚用户有限
- 典型参与者：海尔、美的

## 技术赋能模式

- 定义：全屋智能方案提供商作为第三方提供包括硬件、软件及服务在内的完整解决方案；
- 优势：方案提供商可直接提供一站式服务，用户体验好
- 劣势：各品牌产品的连接性弱于生态合作模式
- 典型参与者：云起、欧瑞博

## 生态合作模式

- 定义：互联网厂商主推，家电品牌可选择接入这些厂商的家用智能终端；
- 优势：用户可自主选择品牌，个性化体验好
- 劣势：海量用户隐私数据需统一上传至平台端，容易引发数据安全问题
- 典型参与者：华为、小米

资料来源：头豹研究院，亿欧智库，天风证券研究所



# 为什么是现在？软硬件升级提升智能家居可用性

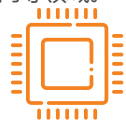
- 近年来，技术进步大幅增加了智能家居的可用性。硬件方面，**芯片算力的升级、通讯技术的更新以及传感器功能的增强**为智能家居发展提供技术基础；软件方面，**边缘计算、人工智能催生出新型IoT系统**，以实现万物互联。

硬件

## 32位MCU芯片

物联网终端功能控制和实现的核心是MCU芯片。MCU芯片由CPU、存储器、各类端口构成，是智能控制的核心部件，可以简单理解为一台微型电脑。

对比原先市场主流的8位及16位MCU，**32位MCU因其高效的性能，近年来发展迅速**，近年来被广泛应用于智能家居、物联网等领域。



## 5G基础设施

5G网络带宽大、连接广、延时低，为物物相连打下基础。作为基础性技术，5G将与现有网络实现互补与协作，降低设备间的通信连接成本，保证智能家居的稳定性。在运营商的推动下，以NB-IoT为代表的低速5G技术将实现规模化应用。

## MEMS传感器

传感器承担设备采集数据，感知环境的重要设备，近年来发展迅速。近年来，**传感器与MEMS结合是当下技术的新趋势**，MEMS传感器集成通信、CPU、电池等组件及多种传感器，具有体积小、功耗低、成本低、集成度高、智能化等特点。目前，传感器在智能家居领域的应用主要有：

- 语音交互传感器
- 激光雷达传感器
- 红外传感器



软件

技术创新

**边缘智能技术：**将智能处理能力下沉至更贴近数据源头的网络边缘侧，就近提供智能化服务。  
**AIoT：**通过NLP，图像处理，深度学习构建物联网人工智能。

## IoT系统



赋能

智能家居OS

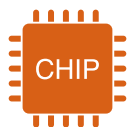
2017年，海尔发布首个智能家庭OS，实现家电网联化。  
2021年，华为鸿蒙系统从软件的底层技术来让更多的设备融为一体，**为不同设备的智能化、互联与协同提供了统一的语言。**

资料来源：芯海科技招股书，敏芯股份招股书，欧博瑞官网，华为官网，亿欧智库，天风证券研究所



# 为什么是现在？核心部件低成本化利于智能家居普及

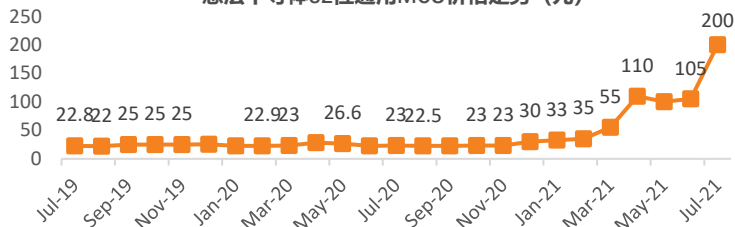
- 从历史数据来看诸如芯片、传感器、WIFI模组等智能硬件设备价格均维持低位，成本的降低是近年来智能家居的发展和普及的必要条件。



## 芯片

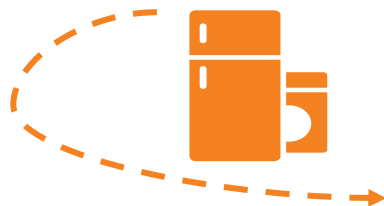
剔除半导体行业周期性影响导致的供需失衡因素，从长期来看，受益于海内外主要晶圆厂产能扩张计划，MCU芯片价格中枢有望下降。

意法半导体32位通用MCU价格走势（元）



## 传感器

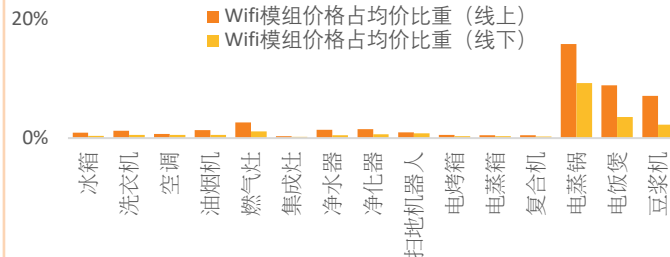
随着传感器技术的发展，全球传感器平均单价持续走低，智能设备的联网部署成本大幅降低，从基础设施层面支持AIoT行业的发展。



## 通讯模组

在无线通讯技术中，Zigbee、Wi-Fi以及蓝牙在智能家居行业中应用最为广泛，各技术在传输效率、功耗等方面各异，总体来说成本占比较低。

WiFi模组价格占各品类均价比重



## Tuya OS 收费模式



## IoT系统

现阶段跨平台的IoT系统如鸿蒙OS，Tuya OS等，仍处于产品推广阶段，一般采用前期免费使用，后期对单个产品进行协议价付费的模式。

## 免费套餐

涂鸦IoT平台客户目前可限时享受IoT平台开发者免费调试套餐，限时免费到期后，或单个产品超出免费额度时，可以通过在线购买方式付费。

资料来源：正能量电子网，Gartner，头豹研究院，奥维云网，天风证券研究所



### 3. 未来十年：万物互联，开启智能家居新篇章





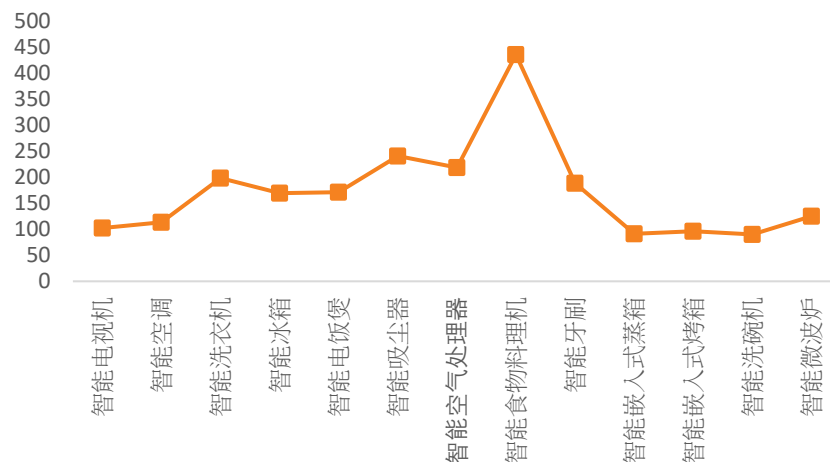
# 智能家居新篇章：一次性的产品价格提升

- 对比同一品牌、相同技术参数的智能与非智能产品后，可以看到智能化给产品价格带来不同幅度的提升。
- 根据中怡康报告，对比智能产品与该产品整体均价后发现，2021年至今智能家电单品均有不同程度的溢价，其中，智能食物料理机的溢价程度最高，其2021年至今的价格指数为435。

品类	品牌	技术参数	智能家电产品型号	产品外观	价格(元)	普通家电产品型号	产品外观	价格(元)	价格提升幅度
空调	格力	2匹/三级能效	格力2匹云酷II新能效变频冷暖自清洁智能客厅圆柱立式柜机KFR-50LW/AhAc3BG		5699	格力(GREE)空调云之炫新三级能效变频冷暖自清洁大风量除湿客厅家用圆柱立式柜机2匹KFR-50LW/AhGg3Bt		4798	18.78%
	海尔	大一匹/一级能效	海尔(Haier)空调新一级能效更省电智能操作自清洁变频冷暖壁挂式卧室空调挂机速享风大一匹KFR-26GW/81EUI-Ge		2299	Haier/海尔空调大一匹1.5匹挂机壁挂式家用卧室房间快速制冷一键舒适节能省电新能效大一匹单冷KFR-26G/MCA75		1749	31.45%
	美的	大一匹/一级能效	美的(Midea)新一级能效酷省电变频冷暖大一匹壁挂式空调挂机以旧换新KFR-26GW/8VHA1		2499	美的(Midea)KFR-26GW/8P2DN8Y-DH400(Q)大1P空调(套)		1999	25.01%
冰箱	美的	300-350升/一级能效	【19分钟急速净味】325升三门冰箱雷达感温一级能效变频智能家电BCD-325WTPZM(E)		4699	美的(Midea)321升多门法式四门双开门家用冰箱变频一级能效节能低噪风冷无霜以旧换新BCD-321WFFM(E)		3299	42.44%
	海尔	300-350升/一级能效	海尔(Haier)331升变频风冷无霜多门冰箱一级能效三档变温直开抽屉低噪净味母婴BCD-331WLHD78D9U1		3799	海尔(Haier)冰箱328升四门多门风冷无霜一级变频杀菌变频节能超薄家用BCD-328WDPD		2999	26.68%
洗衣机	格力	8-9公斤/洗烘一体机	格力晶弘洗衣机烘洗一体机一级能效洗衣机8公斤不伤衣服静音不震动XQG58-DW B1401Ab1 奢华金		5699	格力(GREE)滚筒洗衣机全自动9公斤家用变频一级能效健康祛味除菌洗衣智能甩干专用桶自洁洗衣机省电		4699	21.28%
	海尔	9公斤/滚筒洗衣机	9公斤滚筒洗衣机XQG90-B14176LU1		4999	海尔(Haier)9KG全自动滚筒变频洗衣机超薄洗衣机家用大容量大筒径巴氏杀菌专利双喷淋智能投放纤美		3499	42.87%

### 2021年至今智能家电价格分析

价格指数 = (智能产品均价/该产品整体均价) \* 100



资料来源：美的商城，海尔官网，京东，中怡康，天风证券研究所



# 智能家居新篇章：产业链协同，低频产品消费结合高频周边消费

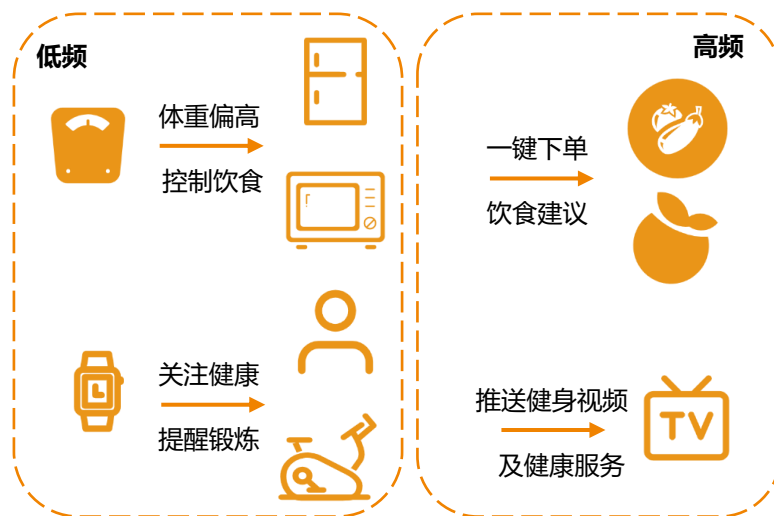
- 万物互联下，低频的家电消费有望与高频周边消费结合，打造产业链协同。
- 我们设想两种家居场景：1) 智能秤显示用户体重偏高，向冰箱及烤箱传递用户需控制体重的信息，冰箱一键下单蔬菜、水果等健康食品，烤箱则向用户推荐定制化的饮食建议及个性化的烹饪程序；2) 智能手表监测到用户的心率变动异常，向用户传递关注健康的信息的同时，向健身器材传递提醒用户锻炼的信息，后续电视也接收到这一信号，推送健身及锻炼的相关内容。

万物互联实现产业链协同



注：括号中的数字为该产业2020年在中国的市场空间。  
资料来源：欧睿国际，天风证券研究所

低频消费串联高频消费



# 投资建议及风险提示

## 投资建议

**家电智能化及全屋智能家居是未来家电行业由量增转为质增阶段的重要趋势，我们长期看好智能家电的发展。**从供给端看，芯片、通讯技术、传感器、通讯模组、AIOT等软硬件的增强升级及成本下降使智能家居真正实现互联互通，智能家电已逐步从单品智能转向系统化发展；从需求端看，居民消费水平提高，家务劳动时间压缩及“一老一小”问题凸显等多重因素共振下，家居智能化等高端需求逐步释放。智能化为家电行业开启新篇章，一方面，智能化升级带来家电产品价格的一次性提升；另一方面，万物互联下，低频的家电消费有望与高频周边消费结合，打造产业链协同。

## 风险提示

**消费需求不及预期：**终端消费者的需求情况难以预测；

**物联网推进不及预期：**物联网作为智能家电的技术支撑，如果发展情况不及预期，可能带来智能家电应用落地困难；

**原材料价格大幅波动：**家电产品的原材料占总成本比重较高，如果原材料成本大幅波动，可能会影响家电产品总成本进而传导至终端价格；

**智能家电产品发展低于预期：**智能家电产品目前还处于初期阶段，未来发展情况仍有待观察。



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Category	Description	Ratings	System
Stock investment ratings	within 6 months from the report issuance date, increase or decrease relative to the Index of the jurisdiction of the Stock in the same period	Buy	Expected relative return over stock price above 20%
		Accumulate	Expected relative return over stock price between 10% and 20%
		Neutral	Expected relative return over stock price between -10% and 10%
		Sell	Expected relative return over stock price below -10%
Industry investment ratings	within 6 months from the report issuance date, increase or decrease relative to the Index of the jurisdiction of the Industry in the same period	Outperform	Expected increase of industry index over 5%
		Neutral	Expected increase of industry index between -5% and 5%
		Underperform	Expected increase of industry index below -5%

Jurisdictions	Index Used for Ratings Definitions
China Mainland	CSI 300 Index
China-Hong Kong	Hang Seng Index
China-Marco	Hang Seng Index
USA	Standard & Poor's 500 Index

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